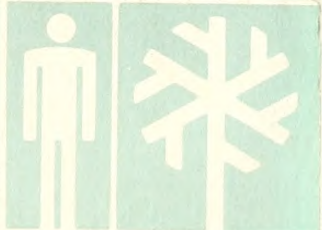


historic structure report

november 1980

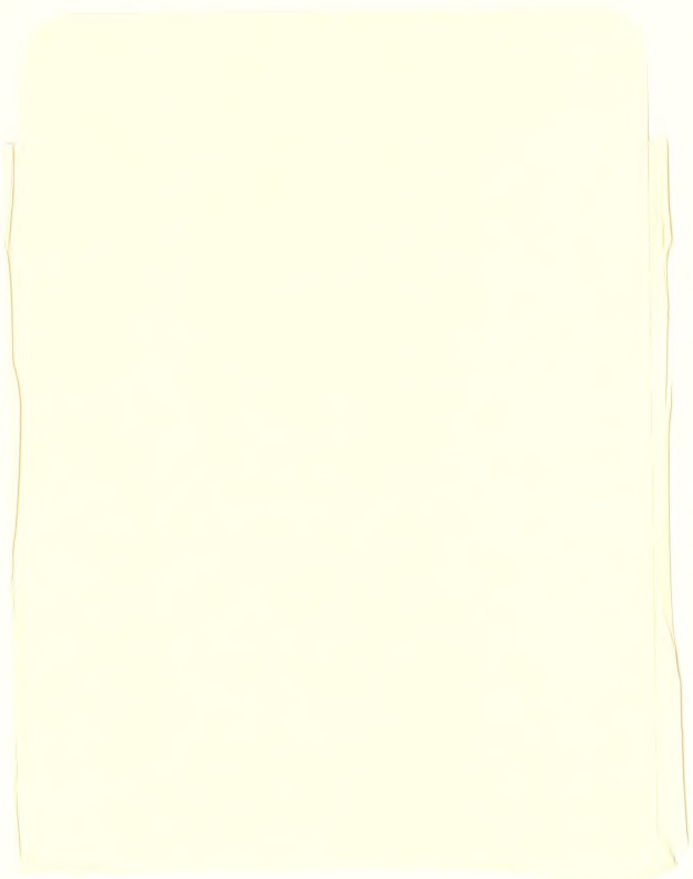
FORT MATANZAS



NATIONAL MONUMENT / FLORIDA



Property of NPS
Castillo de San Marcos N. M.
Fort Library





113.
9181
UNI
Property of NPS
Castillo De San Marcos N. M.
Fort Library

HISTORIC STRUCTURE REPORT

for

FORT MATANZAS NATIONAL MONUMENT
ST. JOHN'S COUNTY, FLORIDA


Prepared by:

THE FORT MATANZAS STABILIZATION TEAM

Copy 2

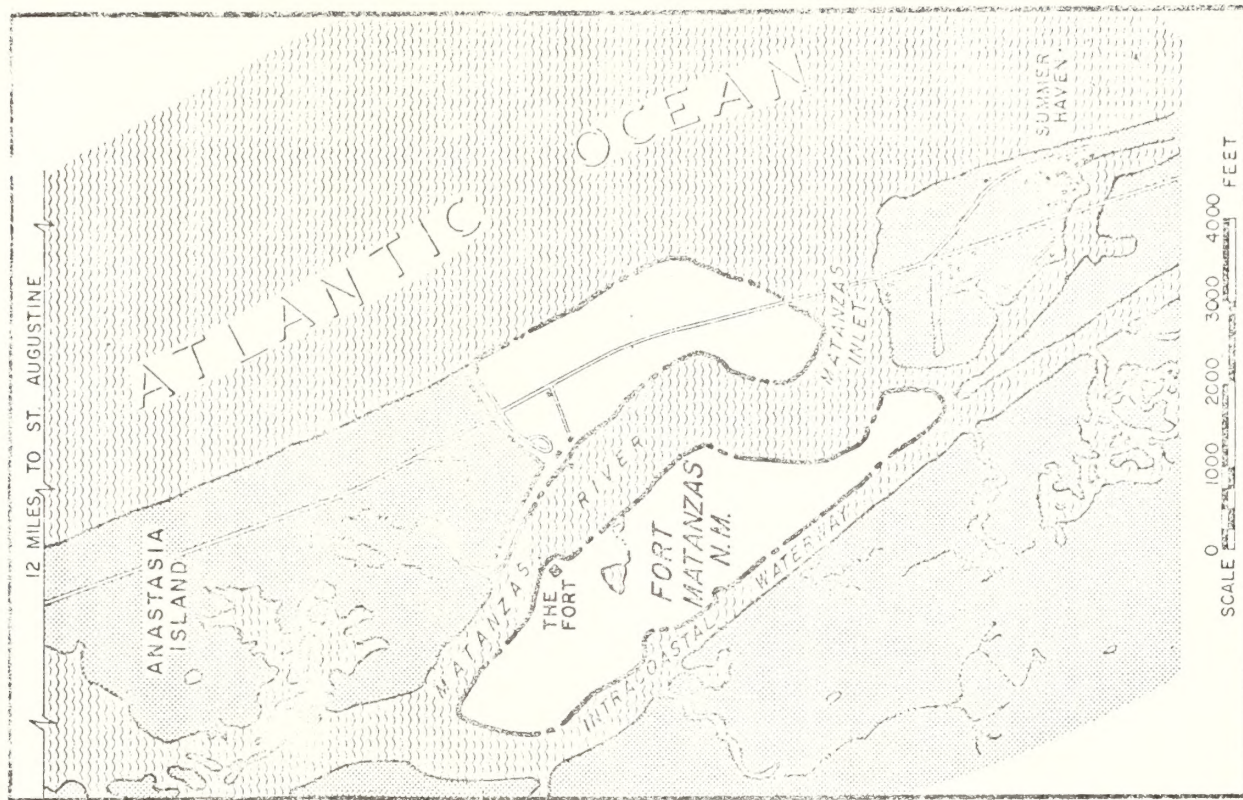
DENVER SERVICE CENTER
SOUTHEAST/SOUTHWEST TEAM
HISTORIC PRESERVATION BRANCH
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
DENVER, COLORADO

Copy 2
CASA 0639

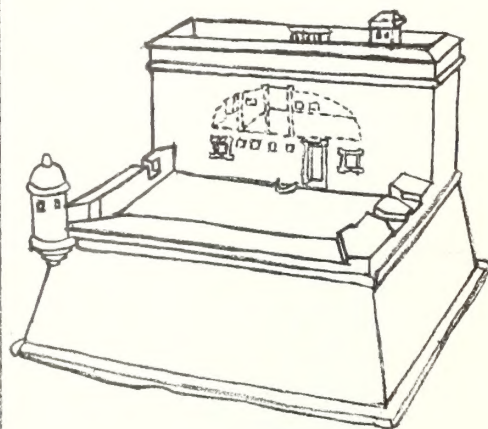
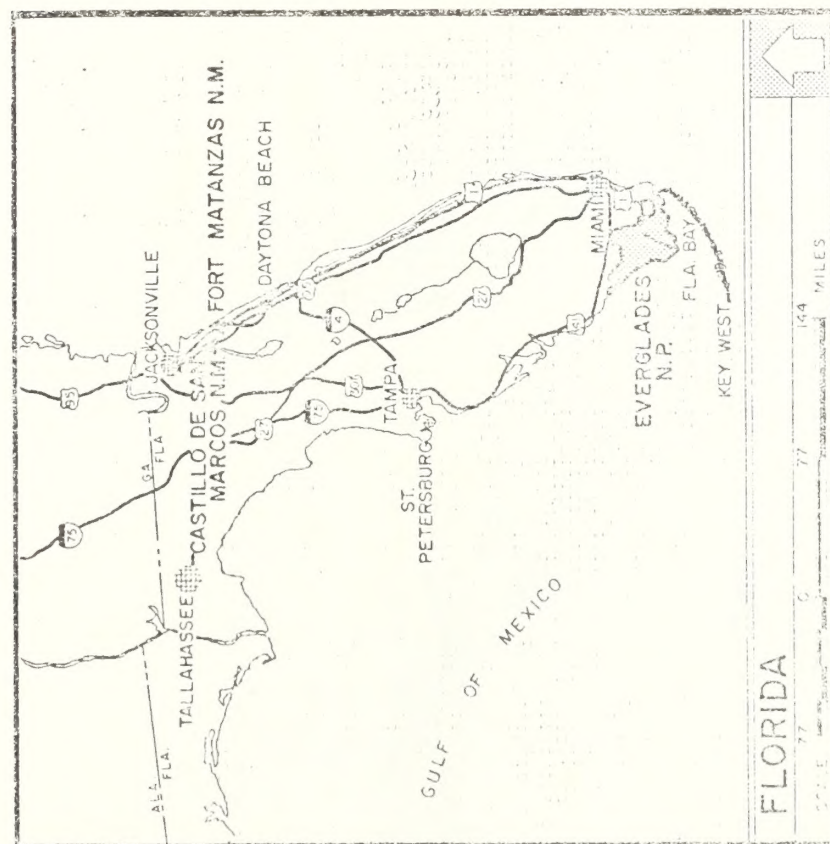


Digitized by the Internet Archive
in 2012 with funding from
LYRASIS Members and Sloan Foundation

<http://archive.org/details/historicstructure00fort>



VICINITY MAP

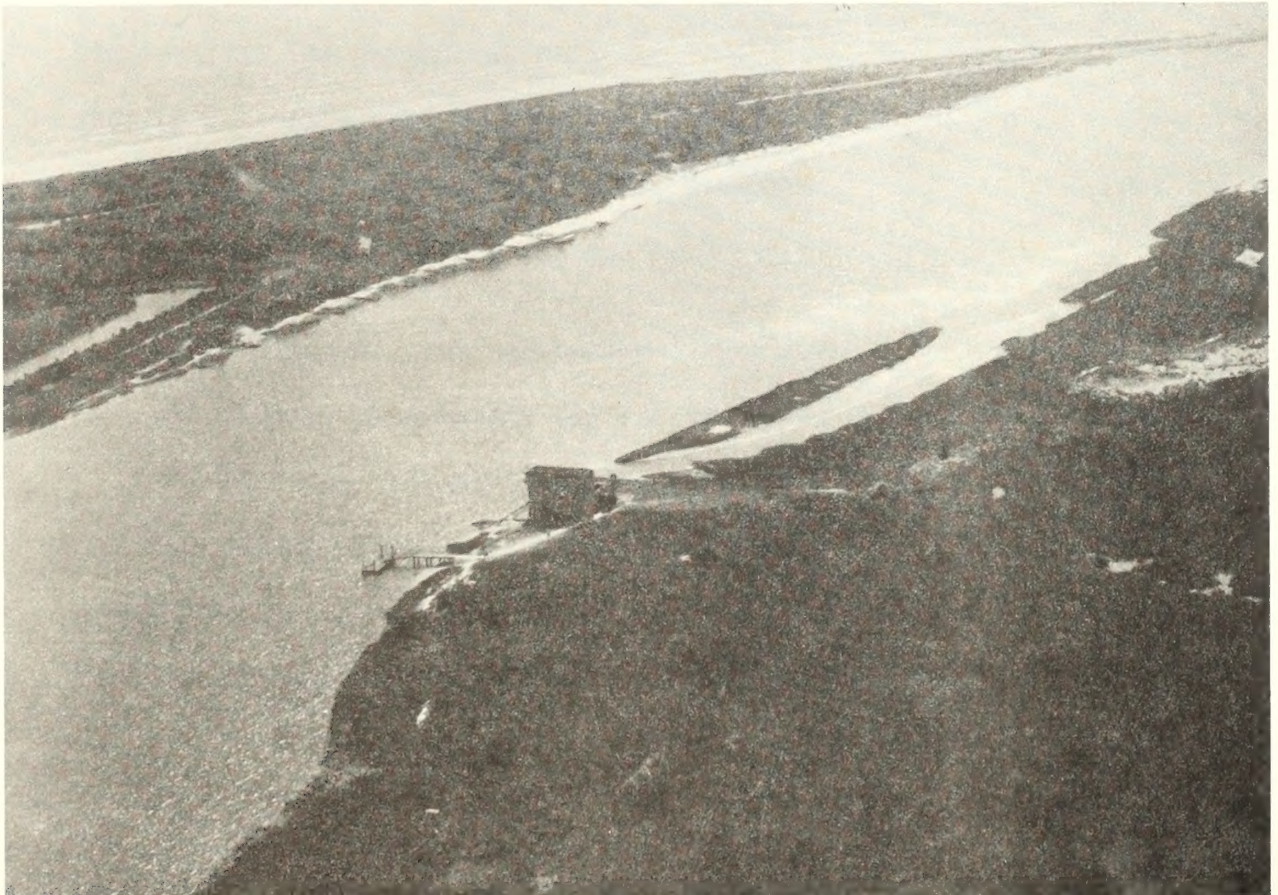


FORT MATANZAS

LOCATION MAP

FORWARD

The Historic Structure Report for Fort Matanzas National Monument is the product of a number of individuals of the Historic Preservation Branch, Southeast Team, Denver Service Center (DSC) in cooperation with the Monument staff in St. Augustine, Florida (CASA and FOMA), Professionals at the Southeast Regional Office (SERO), the office of the Chief Historical Architect (WASO) and archeologists at both the Regional Archeological Center and Florida State University. Other professionals have been consulted throughout the nation. Working together during the past eight months this cooperative effort has examined the status of the Matanzas Watchtower under the mandate of 10-238 Package #104 and its Task Directive approved September 1978. These documents call for the preparation of a Historic Structure Report which is intended to facilitate stabilization programs at the Monument. The Historic Structure Report, being thus focused, presents findings and observations based on a Class "B" investigation (see National Park Service Professional Standards).



FORT MATANZAS NATIONAL MONUMENT
HISTORIC STRUCTURE REPORT

TABLE OF CONTENTS

VICINITY MAP. . . . .	.iii
FORWARD	v
LIST OF ILLUSTRATIONS	ix
SECTION I: ADMINISTRATIVE DATA	1
SECTION II: HISTORICAL DATA.	5
A. First Spanish Period 1740-1763	7
B. British Period 1763-1784	37
C. Second Spanish Period 1784-1821.	51
D. U.S. War Department Period 1821-1933	83
E. National Park Service Period 1933-1979	143
SECTION III: ARCHEOLOGICAL DATA.	181
SECTION IV: ARCHITECTURAL DATA	191
A. Historic Appearance of Fort Matanzas	194
B. Development/Study Package Proposal No. 104-- Discussion.	201
C. Package No. 104 Recommended Treatments	204
D. Summary of Existing Conditions and Problems.	206
E. Additional Studies and Observations.	221
F. Historic Structure Report Drawings	227
APPENDICES.	245
A. Foundations and Pilings, from Bernard Forest de Belidor's La Science des Ingenieurs (Paris: 1929), Book III, pp. 55-58, plate 8	247

B. Ordnance Material at Fort Matanzas, 1784-1821	255
C. The Furnishings of Fort Matanzas 1784-1821	261
D. Chronology of Historical Developments of Fort Matanzas with Graphic Records	265
E. Existing Conditions--Problems--Treatment Alternatives	321
F. Future Recommended Treatments for Fort Matanzas Stabilization.	395
G. Archeological Investigation of the Fort Matanzas Interior - 1978.	399
H. Foundation Investigation - 1978.	461
I. Material Problems in the Preservation of Fort Matanzas	469
J. Engineering Analysis of Observation Tower Vault. . . .	481
BIBLIOGRAPHY.	493
FORT MATANZAS STABILIZATION TEAM.	507

LIST OF ILLUSTRATIONS

Unless otherwise referenced, all photographs and graphics were prepared by the Denver Service Center team. The "Photo M" numbers refer to the identification system used by the Fort Matanzas National Monument archives located at Castillo de San Marcos National Monument, St. Augustine, Florida.

The illustrations numbered sequentially 1 through 27 are found in the body of the report. Illustrations numbered with a letter prefix are found within the corresponding appendix.

1. Artists' conception of the wooden watchtower at Matanzas Inlet in 1671.	16
2. Map inset entitled " A Draught of Matanzas Inlet as taken by Lieut. Todiman of the Phoenix who was sent with the Pilots of the Men of War on purpose to sound the same."	18
3. "Profil d'un revetement bati sur pilotis" (Cross section of a scarp wall built upon piling) and "Fondemens sur pilotis" (Foundation on piling).	30
4. William Gerard de Brahm, "A Plan of Part of the Coast of Florida, including St. Johns River, from an Actual Survey, 1769."	58
5. Rafael Llobet, "Plano, per files y elevaci6n de la Torre de Lerma...en Campeche (M6xico)," October 2, 1789.	64
6. "Fort Matanzas Inlet" by Lt. H. W. Benham, 1843.	91
7. U.S. Coast and Geodetic Survey, Matanzas Inlet Quadrangle, August 1882.	94
8. Cultural Sequence for Florida (Irving Rouse)	184
9. Cultural Resources Base Map.	185
10. Major Organizational Components of the Matanzas Watchtower.	195
11. Existing Architectural Elements, Fort Matanzas	196
12. "Fort of Matanzas Inlet" by Lt. H. W. Benham, 1843	198
13. A. Manucy Model, 1951, With Element Identification--South View	199
14. A. Manucy Model, 1951--West View	200
15. Aerial Photograph of Rattlesnake Island and Matanzas Inlet Area.	208

16. Shoreline Transformation . . . . .	.209
17. Fort Matanzas During Storm High Tide, November 3, 1978 . . . . .	.210
18. Percent Distribution of Ebb Tidal Prism Before Closure (October 1976) and After Closure (April 1977) . . . . .	.212
19. Detail of South Scarp Erosion. . . . .	.215
20. Detail of East Scarp Erosion . . . . .	.216
21. Detail of North Face Under Non-Historic Scupper. . . . .	.217
22. Detail of Subgrade Scarp at Southwest Corner (South Salient). . . . .	.218
23. Detail of Terreplein . . . . .	.219
24. Detail of West Réduit Face . . . . .	.222
25. Detail of Tie Rods Under Réduit Deck . . . . .	.223
26. Detail of Sentry Box Base. . . . .	.224
27. Detail of Decayed Second Floor Joist . . . . .	.225

D-1.	A Plan of the Fort and Harbour of Matanzas Distant from St. Augustine Five Leagues, 1765, Moncrief . . . . .	.268
D-2.	Ramón de la Cruz, N ^o 5, Torre de Matanzas con su barra, June 4, 1821 . . . . .	.272
D-3.	Fort Matanzas published in <u>Picturesque</u> <u>America</u> , 1872. . . . .	.273
D-4.	Fort Matanzas, July 23, 1912 . . . . .	.274
D-5.	Fort Matanzas, July 23, 1912 . . . . .	.275
D-6.	View of Terreplein and South Face of Tower, circa. 1914. . . . .	.275
D-7.	Fort Matanzas, 1915. . . . .	.276
D-8.	Detail of Réduit Vault, 1915 . . . . .	.276
D-9.	View of Fort Matanzas, 1916. . . . .	.277
D-10.	View of Tower Deck, 1923 . . . . .	.278
D-11.	Detail of South Scarp, April 1923. . . . .	.279
D-12.	Detail of East Scarp, April 1923 . . . . .	.279
D-13.	Dismantled East Scarp During 1924 Reconstruction . . .	.280
D-14.	Dismantled South Scarp During 1924 Reconstruction. . .	.281
D-15.	Fort During 1924 Reconstruction Work . . . . .	.282
D-16.	Fort After 1924 Reconstruction Work. . . . .	.283
D-17.	Fort After 1924 Reconstruction Work. . . . .	.283
D-18.	View of 1926 Reconstructed Sentry Box from Terreplein . . . . .	.284
D-19.	View of 1926 Reconstructed Senty Box, Exterior View, August 1929. . . . .	.285

<u>Illustration</u>	<u>Page</u>
D-20. View of Fort With Oyster Shell Protection at Base and New Access Ladders, Between 1925 and 1929 . . .	.286
D-21. View of 1929 Reconstructed Sentry Box, 1930. . . . .	.287
D-22. View of 1929 Reconstructed Sentry Box from Terreplein . . . . .	.288
D-23. View of Fort with Oyster Shell Protection at Base and New Access Ladder with Second Reconstructed Sentry Box, 1933 . . . . .	.289
D-24. Historic American Building Survey Drawings, 1934, Five Sheets. . . . .	.291-95
D-25. View of Tower Roof, 1934 . . . . .	.297
D-26. Detail of Scarp at Southeast Corner, About 1935. . . .	.298
D-27. View of Matanzas River at Base of East Scarp of Fort, circa. 1935 . . . . .	.299
D-28. Southeast Salient of Fort Washed by River, October 1936 . . . . .	.300
D-29. View of Entrance Through West Embrasure, circa. 1936. . . . .	.301
D-30. View of New Bulkhead with Riprap and Paving Stones, circa 1936 . . . . .	.302
D-31. View of Fort with New Stairs and Flag, circa. 1940. . . . .	.303
D-32. View of Vault Stabilization Project, December 1938. . . . .	.304
D-33. View of Vault Stabilization Project, December 1938. . . . .	.305
D-34. View of Fort and New Groins, circa 1942. . . . .	.306
D-35. Interior View of First Floor, circa 1940. . . . .	.307
D-36. Aerial View of Fort Site After Storm Damage, October 1947 . . . . .	.308

D-37.	View of Southeast Corner Erosion, November 1948. . . .	309
D-38.	View of North Scarp Erosion, November 1948	310
D-39.	Construction of 800 Cubic Yard Groin, December 15, 1948.	311
D-40.	Treating Steel Bulkhead, December 15, 1948	312
D-41.	View of Backfilled Steel Bulkhead, March 23, 1949	313
D-42.	View of New 800 Cubic Yard Groin, March 23, 1949 . . .	314
D-43.	Aerial View of Fort Site After Hurricane Dora.	315
D-44.	Detail View of Timber Sheet Piling, March 2, 1966. . .	316
D-45.	View of Backfilling Operation Behind Timber Sheet Piling, March 2, 1966.	317
D-46.	Aerial View of Fort Site, 1971	318
D-47.	Aerial View of Fort Site, April 19, 1979	320

E-1.	Detail of Steel Sheet Bulkhead . . . . .	.325
E-2.	Detail of South Shore Revetment. . . . .	.327
E-3.	Detail of Coquina Seawall East of Fort . . . . .	.329
E-4.	Area South of Fort--South Groin and Barrier Island .	.331
E-5.	View of Shore East of Fort . . . . .	.333
E-6.	Southeast Corner of Site . . . . .	.336
E-7.	Cost Summary of Various Types of Shore Protection . . . . .	.339
E-8.	Detail of North Face Windows . . . . .	.341
E-9.	Réduit South Face. . . . .	.344
E-10.	Detail of South Face and Stairs. . . . .	.345
E-11.	View of Terreplein from Tower Deck . . . . .	.350
E-12.	View of West Parapet Superior Slope. . . . .	.353
E-13.	Detail of Entrance Embrasure . . . . .	.354
E-14.	Detail of Sentry Box Entrance. . . . .	.356
E-15.	Detail of Sentry Box Base. . . . .	.357
E-16.	Detail of Steel Deterioration at Sentry Box Cordon. .	.358
E-17.	Detail of Steel Deterioration at Sentry Box Dome . .	.359
E-18.	Detail of Cistern Opening. . . . .	.361
E-19.	First Floor Interior--Looking West . . . . .	.362
E-20.	First Floor Interior--Looking East . . . . .	.363
E-21.	Detail of First Floor Doorway Steps. . . . .	.365
E-22.	Detail of Southwest Window--Exterior . . . . .	.366

E-23.	Detail of First Floor North Window--Interior . . . .	.369
E-24.	Detail of First Floor Southwest Window--Interior . .	.370
E-25.	Detail of First Floor Southeast Window--Interior . .	.370
E-26.	Detail of Vaulted Ceiling--West End. . . . .	.373
E-27.	Second Floor Interior--Looking West. . . . .	.374
E-28.	Second Floor Door--Exterior. . . . .	.375
E-29.	Second Floor Door--Interior. . . . .	.375
E-30.	Detail of Second Floor Interior--North Wall. . . . .	.378
E-31.	Detail of Second Floor North Window--Interior. . . .	.380
E-32.	Detail of Second Floor Interior--South Wall. . . . .	.382
E-33.	Detail of Réduit Roof. . . . .	.387
E-34.	Detail of Scupper--South Face. . . . .	.388
E-35.	Detail of Scupper--North Parapet . . . . .	.388
E-36.	View of Tower Deck--Looking Northeast. . . . .	.390
E-37.	View Along South Parapet--Tower Deck . . . . .	.391
E-38.	View Along North Parapet--Tower Deck . . . . .	.391

G-1. Matanzas Vicinity. . . . .	.403
G-2. Archeological Base Map . . . . .	.404
G-3. Overall Excavation Plan. . . . .	.412
G-4a. Trench A, East Profile--Map. . . . .	.416
G-4b. Trench A, East Profile--Photo. . . . .	.417
G-5a. Trench A, Feature 7. . . . .	.419
G-5b. Trench A, Floor 3. . . . .	.420
G-5c. Green-grey Clayey Mud Fill Below Trench A in Observation Tower Lower Floor . . . . .	.421
G-6a. Trench B. South Profile--Map . . . . .	.423
G-6b. Trench B, South Profile--Photo . . . . .	.424
G-7. Trench B, Features 8, 9, 10--Top View. . . . .	.427
G-8. Trench C, Hearth Interior at Feature 8 (Floor 2) . . . . .	.428
G-9a. Trench D Profiles--Map . . . . .	.429
G-9b. Trench D, East Profile--Photo. . . . .	.430
G-9c. Trench D, North Profile--Photo . . . . .	.431
G-10a. Trench E, South Profile--Map . . . . .	.434
G-10b. Trench E, South Profile--Photo . . . . .	.435
G-11a. Trench E, East Profile--Map. . . . .	.436
G-11b. Trench E, East Profile Showing Fort Foundation-- Photo. . . . .	.437
G-12. Trench E, Base, Wood Pilings--Map. . . . .	.440
G-13. Above-Grade Indication Wooden Platform--Photo. . . . .	.444
G-14. Provenience Guide. . . . .	.447

G-15. Provenience Guide, Trench A. . . . .	.448
G-16. Provenience Guide, Trench B. . . . .	.449
G-17. Provenience Guide, Trench C. . . . .	.450
G-18. Provenience Guide, Trench D. . . . .	.451
G-19. Provenience Guide, Trench E. . . . .	.452
G-20. Architectural Samples. . . . .	.453-54
G-21. Artifacts Catalogue (Not including architectural samples) . . . . .	.455-56
G-22. Land Form Change at Matanzas Inlet, 1765-1882. . . . .	.457
G-23. Relationship of Land Forms at Matanzas Inlet, 1765-1969. . . . .	.458
G-24. Land Form at Matanzas Inlet, 1964. . . . .	.459

IllustrationPage

H-1. Fort Matanzas Foundation Investigation Test Digs--Location Plan. . . . .	.466
H-2. Dig Number 4--Along West Scarp . . . . .	.467
H-3. Test Dig at Northwest Corner . . . . .	.467
H-4. Dig Number 1--Along East Scarp . . . . .	.468
H-5. Dig Number 3--Along North Scarp. . . . .	.468

SECTION I
ADMINISTRATIVE DATA

I. ADMINISTRATIVE DATA SECTION

A. Name and Number of Structure

Fort Matanzas, identified on the List of Classified Structures as #00350, is located on Rattlesnake Island, Fort Matanzas National Monument, St. Johns County, Florida. Category of Significance is Category Ia.

B. Proposed Use of Structure

The structure will be used for public visitation as an historic structure to interpret military engineering in the Spanish Period of Eastern Florida.

C. Justification for Use

Fort Maranzas is a rare surviving example of Spanish fortification as erected in Florida in the 18th century. The structure possesses integrity of location, design, setting, materials, workmanship, feeling and association, and is associated with events that have made a significant contribution to the broad patterns of our history. It also embodies the distinctive characteristics of a type, period, and method of construction.

D. Provision for Operating Structure

The structure will be operated by staff of the National Park Service in accordance with Policy and applicable approved planning documents.

E. Cooperative Agreements

No cooperative agreements now exist relating to the use of this structure and none are anticipated.

SECTION II
HISTORICAL DATA

Subsection A:

FORT MATANZAS: GUARDIAN OF
ST. AUGUSTINE'S BACK DOOR, 1740-63

by

Luis Rafael Arana

Castillo de San Marcos National Monument
St. Augustine, Florida
December 1978

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS	11
CHAPTER I: STRATEGIC LOCATION OF MATANZAS INLET, 1565-1740 . .	13
<p>Discovery of the inland waterway and the inlet. Both an advantage and a weak spot. Watchtowers and their mission. Watchtower sites changed. Matanzas Watchtower, an interception point. Anglo- Spanish rivalry in the Southeast. Arredondo's recommendation. Siege of 1740.</p>	
CHAPTER II: THE BUILDING OF FORT MATANZAS, 1740-42	25
<p>The defense problem. Authority to build. Beginning. Opportunities for destruction by the British. Completion. Description. Reporting the completion. Armament. Garrison.</p>	
CHAPTER III: FORT MATANZAS PLAYS ITS PART, 1742-63	35
<p>Fort's debut in battle in 1742. Aborted British attempt of 1743.</p>	
APPENDIX A: Foundations on piling, from Bernard Forest de Belidor's <u>La Science des Ingenieurs</u> (Paris: 1729), Book III, pp. 55-58, plate 8	247
BIBLIOGRAPHY.	493

LIST OF ILLUSTRATIONS

Illustration

1. Artist's conception of the wooden watchtower at Matanzas Inlet in 1671 16
2. Map inset entitled "A Draught of Matanzas Inlet as taken by Lieut. Todiman of the Phoenix who was sent with the Pilots of the Men of War on purpose to sound the same." 18
3. "Profil d'un revetement bati sur pilotis" (Cross section of a scarp wall built upon piling) and "Fondemens sur pilotis" (Foundation on piling) from Belidor's La Sceience des Ingenieurs (1729), Book III, plate 8, figs 1 and 2 respectively 30
- D-1. Moncrief's "A Plan of the Fort and Harbour of Matanzas (1765)" 268
13. Photo M-235 of model showing Fort Matanzas as probably completed in 1742 199
4. William Gerard de Brahm, "A Plan of Part of the Coast of Florida, including St. Johns River, from an Actual Survey, 1769" 58

CHAPTER I

STRATEGIC LOCATION OF MATANZAS INLET, 1565-1740

The inland waterway extending southward from St. Augustine Inlet and the other inlet, which allows that waterway to join the Atlantic Ocean, were discovered 16 days after the establishment of St. Augustine. On September 24, 1565, Spanish soldiers exploring the environs in a boat, ascertained that the inland waterway in front of their settlement led five leagues (15 miles) south, that it exited to the ocean, and that the land to port side was an island.¹ Matanzas River and Matanzas Inlet acquired their names after the mantanzas (slaughters) of French soldiers by the Spanish on the shore north of that inlet that same year.² The island became known in succession as La Escolta, Island of La Cantera, and Santa Anastasia.³ The reason for the second name is obvious: the cantera (quarry) of coquina stone was on the island. The reason behind the other two names had not been found.

1. On Saturday, Sept. 22, 1565, the Spanish made an unsuccessful attempt to retrieve, for their use, a French frigate which had run aground at the mouth of a river about four leagues (12 miles) south of St. Augustine. On Monday following, "the Admiral (Diego Flores de Valdes), disappointed because the ten men returned without the frigate, ordered the fitting out of a small vessel and, taking a dozen men, went upriver to find out what was there and whether perchance there were Indian villages; he found an exit toward the mouth of the river where the frigate had been lost, and they kept going on until they found her, and since the Indians recognized them to be Spaniards, they welcomed them and helped them to float the frigate; and on Tuesday about nine in the morning, they entered this port with her" (Eugenio Ruidiaz y Caravia, La Florida: su conquista y colonizacion por Pedro Menendez de Aviles, 2 vols. (Madrid: 1893), II, 431-473, especially 455, 457.

2. Woodbury Lowery, The Spanish Settlements Within the Present Limits of the United States, 2 vols. (New York: 1905, 1959), II, 189-200 especially 195, fn. 3.

3. No name for Anastasia Island appears in the affidavits attesting to Gov. Manuel de Cendoya's visit to Matanzas Inlet, the Little Inlet, and the quarry on Aug. 21, 1671 (Cendoya to the crown, March 24, 1672, Stetson Collection (Gainesville), Archivo General de Indias 58-1-26/16A), and his second visit to the quarry on Oct. 5, 1672

Jointly Matanzas River and Matanzas Inlet provided important geophysical advantages to St. Augustine. They offered an avenue of water communication which could be used whenever St. Augustine Inlet could not. For instance, the English in 1702 blockaded the latter inlet, occupied the town, and besieged Castillo de San Marcos. The vessel that took this news to Habana slipped out through Matanzas Inlet. Long before the seige, accessibility via the inlet had determined the role, "back door to St. Augustine," that the river and the inlet played during the colonial period.⁴

Similarly that accessibility made Matanzas River and Matanzas Inlet a weak spot in the St. Augustine defenses. An enemy could enter the inlet, sail north first on the Matanzas and then on the San Sebastain River, land on the south or west shores of the latter, and thus surprise the town and its fort on a flank or the rear. This was what the pirates who captured the Matanzas Watchtower in 1683 would have done, had not their boats become lost and the pirates been forced to march over land to defeat at Fish's Island. That was what the Spanish themselves would have done in 1779, had they carried out their plan to capture British St. Augustine.⁵

("Testimonios," Sept. 7, 1672, SC, AGI 58-1-26/17). By 1683 Island of La Cantera (Ex-gov. Pablo de Hita Salazar to the crown, May 24, 1683, North Carolina Collection (Raleigh), AGI 54-5-11/99) and La Escolta (Royal officials to the crown, April 16, 1683, NC, AGI 54-5-14/154) were being used concurrently. Santa Anastasia appears in Antonio de Arredondo's "Plan de la Cinudad de San Agustín de la Florida y sus Contornos," May 15, 1737, and in Pablo Castello's "Plano del Presidio de San Agustín de la Florida y sys Contornos," July 21, 1763.

4. Charles W. Arnade, *The Siege of St. Augustine in 1702* (Gainesville: 1959), 29, 34.

5. Engineer Pedro Ruiz de Olano to the crown, Aug. 8, 1740, SC, AGI 87-1-2/114; The plan of the 1683 pirates to surprise St. Augustine, conceived with the advice of a renegade St. Augustine-born coastal pilot-together with the defense positons taken upon knowledge of the impending attack, point out that the Spanish had long known about the weak spot of the defenses (Luis R. Arana, "Pirates March on St. Augustine, 1683," *El Escribano*, April 1972, 51-72, especially 53-54, 58-59); "Ataque de San Agustín de la Florida," Habana, March 13, 1779, East Florida Papers (Library of Congress), Bundle 176, Document No. 52; "Estado en que se hallaba la plaza de San Agustín de la Florida el 29 de octubre de 1780," EFP, 176/50; "Aditamento al Plan de Ataque del Castillo de San Agustín de la Florida," Habana, January 12, 1781, EFP, 176/49.

A chain of wooden watchtowers was devised in 1569 for the protection of inhabited areas. The watchtowers would be located on the coast both north and south of St. Augustine, at or close to the settlements, so that they would give warning of approaching vessels. Thus, the soldiers in the settlement could be placed on a limited alert and, if the approaching vessel was an enemy, they could take further defensive measures. The watchtower could not delay an intruder because it was not equipped with artillery. That same year a watchtower was erected at Matanzas Inlet.⁶

There were successive watchtowers at Matanzas Inlet until 1740. Most of them were located on the southern end of Anastasia Island, but they need not have been on the same site of the immediately preceding structure. Moreover, some watchtowers, although located in the general area of the inlet, may not have been on Anastasia at all. For instance, in April 1687 a party from St. Augustine went to Matanzas Watchtower to find out whether a vessel sailing from town had been seen traveling southward. The watchtower crew had not seen the vessel, but the commander wanted to be completely sure. He sent a soldier to the "old watchtower (site) which is called La Nea" to scan the sea and see what could be detected.⁷

Its location invested Matanzas Watchtower with an additional subsidiary role. This role was that of interception point of travel southward from St. Augustine, on the inland waterway and on the beach, to south Florida, and of similar travel northward from south Florida to St. Augustine. For instance, in 1696 the Jonathan Dickinson party, shipwrecked at Jupiter Inlet and on its way to Charleston protected by a Spanish patrol, stopped at the watchtower for food and rest. And in 1715 a few of the survivors of the treasure fleet shipwrecked in the Bahama Channel, who had helped themselves to silver coins washed ashore and then deserted northward,

6. Lowery, Spanish Settlements, II, 289-290.

7. Lookouts on the southern tip of Anastasia Island are shown on P. Harrison's and M. Sarrazin's "A Plan of the Harbour of St. Augustine and the adjacent Parts in Florida, representing the field of Action with the Disposition of the Forces before that Castle in the Expedition under General Oglethorpe in 1730," 1742 (The St. Augustine Expedition of 1740--A Report to the South Carolina General Assembly, with an introduction by John Tate Lanning (Columbia: 1954), facing title page) and also on "Part of Florida" with inset entitled "A Drought of Matanzas Inlet as taken by Lieut. Todiman of the Phoenix who was sent with the Pilots of the Men of War on purpose to sound the same," 1743; Gov. Pedro de Aranda y Avellaneda to the crown, April 28, 1687, SC, AGI 54-5-14/41. See Illustration 1.

WRECKS & PIRATES

Niépides built a fort
at MATANZAS by 1589.

Later there was a chain
of sentry houses, where
guards aided castaways
and watched for pirates



Illustration 1

Artist's conception of the wooden watchtower at Matanzas Inlet, 1671,
by Albert Manucy, 1954.

met royal authority at the watchtower and naturally lost their pickings.⁸

In the century that followed the slaughters of the French in 1565, Spain was secure in her possession of Florida. But then the English settled Charleston in 1670. This same year, not prompted by Charleston's founding, the Treaty of Madrid recognized England's sovereignty north of a latitude running just south of Charleston, and Spain's south of it. Despite the treaty, England began expanding southward with the design of eventually expelling Spain from Florida. In 1733 she settled Savannah and in 1736 Frederica, both on land the Spanish regarded as theirs.⁹

In the latter year, at the request of the Council of the Indies in Spain, the governor of Cuba sent Captain engineer-in-ordinary Antonio de Arredondo¹⁰ on a diplomatic mission to Florida. Arredondo demanded from the British the evacuation of the Georgia territory. He also inspected the defenses of Florida. Back in Habana, he submitted a report in November, and he wrote about Matanzas Inlet:

8. Evangeline Walker Andrews and Charles McLean Andrews (eds.), Jonathan Dickinson's Journal Or, God's Protecting Evidence (New Haven: 1945), 27-79, especially 78-79; Gov. Francisco de Corcoles y Martinez to the crown, Jan. 23, 1716, NC, AGI 58-1-30/49.

9. On the Anglo-Spanish rivalry in the Southeast, Herbert E. Bolton (ed.), Arredondo's Historical Proof of Spain's Title to Georgia (Berkeley: 1925) presents the narrative (both in Spanish and English) prepared by Antonio de Arredondo to show Spain's right to the land south of the boundary established by the Madrid Treaty; Verner W. Crane, The Southern Frontier 1670-1732 (Ann Arbor: 1929, 1956) depicts clearly that the British did not regard the boundary set by the Treaty of Madrid as exact and definite and relied more on actual possession; John Tate Lanning, The Diplomatic History of Georgia--A Study of the Epoch of Jenkin's Ear (Chapel Hill: 1936) provides a well balanced examination of the Anglo-Spanish controversies over Georgia and Caribbean commerce.

10. Antonio de Arredondo y Pérez was born in Milan (Italy), the son of Pedro de Arredondo and Antonia Prez. In 1736, he was serving in Habana as captain engineer-in-ordinary. In June, Gov. Guemes XX sent Arredondo to Florida to demand the British evacuation of the Georgia territory, including Fort St. George on the St. Johns River, which demand Arredondo presented to Gen. Oglethorpe at St. Simons. Arredondo also inspected the defenses of Florida and submitted this report in Habana on November 27, 1736, accompanying the

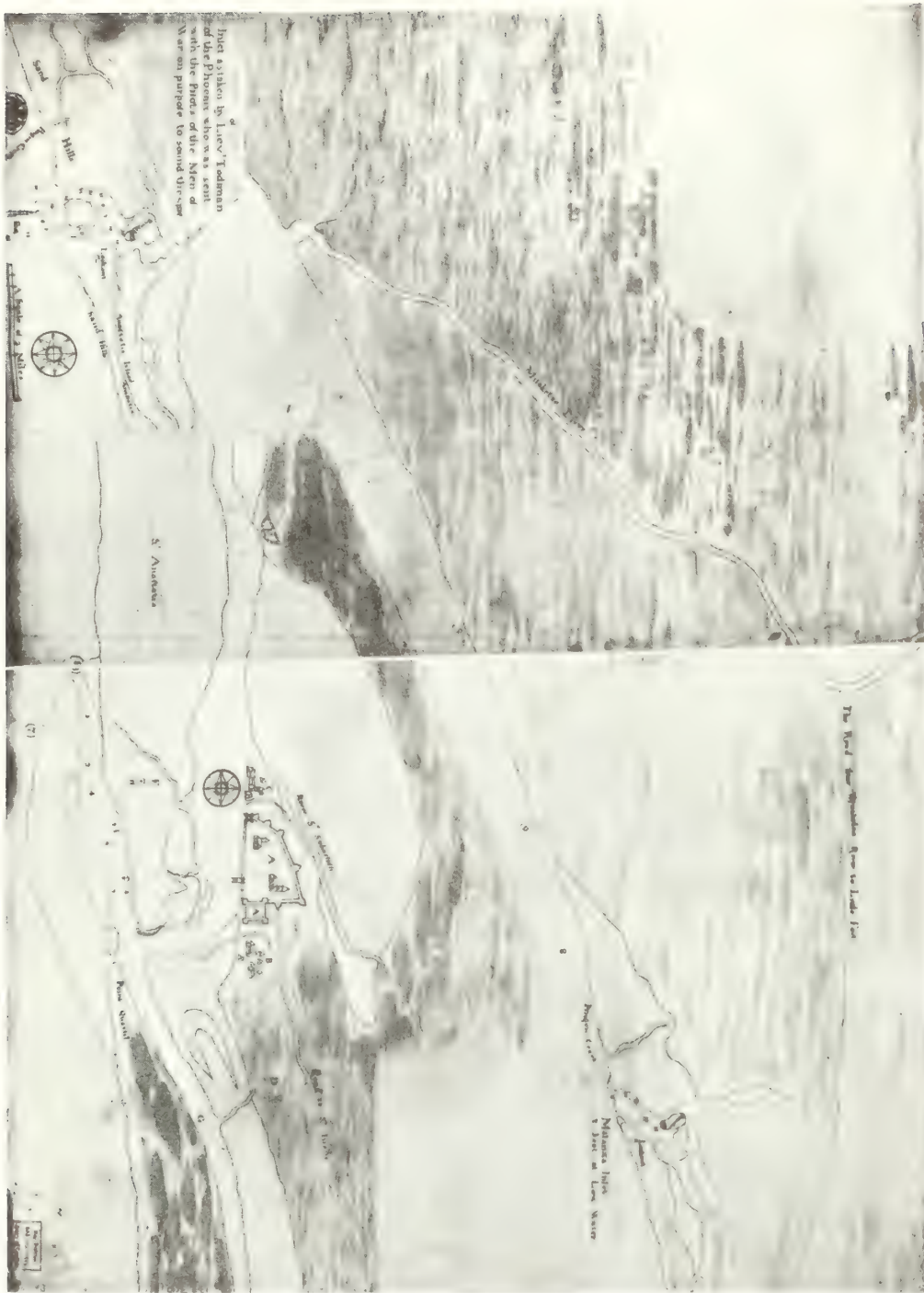


Illustration 2

Map inset entitled "A Draught of Matanzas Inlet as taken by Lieut. Todiman of the Phoenix who was sent with the Pilots of the Men of War on purpose to sound the same." British Museum K.122.83b, published in The Crown Collection of Photographs of American Maps Series II (Cleveland: 1915) edited by A.B. Hurbert.

"To the extreme south point of that Island (Anastasia), the bar of Matanzas is situated, where there is a guard stationed but without any shelter whatsoever. This is abandoned to the insult of any class of enemies. That guard is intended to give advice of any vessel that may come in that direction, being in communication with another bar, which is situated a league further south, del Penon, where another guard

report apparently with drafts of a map of St. Augustine and its environs, a plan and cross section of Castillo de San Marcos, a map of the coast (of larger Florida, that is from Charleston to Cape Canaveral), a map of the port of Frederica or St. Simons River, and a plan of a projected battery at the mouth of the St. Johns River. Some of these drawings were later dated May 15, 1737. Arredondo returned to St. Augustine on April 14, 1738 in company of Sublieutenant engineer-in-extraordinary Pedro Ruíz de Olano. Together they decided that "modernizing" Castillo de San Marcos was the work needed most urgently, which Ruiz would execute. On June 9, Arredondo departed overland on a 32-day trip to Apalache, where he designed the stone fort to be erected there, and surveyed sites adequate for settling 200 families from Galicia. On March 20, 1742, already an engineer-in-second (lieut. col.), he submitted in Habana the voluminous narrative entitled "Demostracion Historiographica del derecho que tiene el Rey Catolico a el territorio que hoy posee el Rey Britanico con el nombre de Nueva Georgia en la Provincia y Continente de la Florida." In June and July he was present as chief engineer of the unsuccessful invasion of Georgia. Arredondo died in Habana as an engineer director (colonel) on June 14, 1754. His first wife was Bernarda de Salvatierra, who died without issue. His second wife was Josefa Gabriela de Ambulodi, daughter of Capt. Miguel Ambulodi and Maria Josefa de Arriola, whom he married on Nov. 24, 1748, by whom he had two sons and two daughters (Manuel Perez-Beato (ed.), Archivo de Indias -- Ingenieros cubanos, Siglos xvi, xvii y xviii -- Noticias historicas extractadas por el Capitan de ingenieros Don Benito Leon Y Canales (Habana: 1941/, 92-93; Lanning, Diplomatic History, 48 fn. 39, 51-52; Woodbury Lowery, A descriptive List of Maps of the Spanish Possessions Within the Present Limits of the United States, 1502-1820, edited with notes by Philip Lee Phillips/Washington: 1912), 270-273; Juan Manuel Zapatero, Historia de las fortificaciones de Puerto Cabello (Carcas: 1977), 34-35; Gov. Manuel de Montiano to Secretary of State for the Indies Marquess de Torrenueva, May 28, 1738, SC, AGI 86-5-25/4; id. to id., June 12, 1738, SC, AGI 87-1-3/51; id. to Gov. Juan Francisco de Guemes y Horcasitas of Cuba, June 2, 1738, EFP, 37/43; id. to id., June 17, 1738, EFP, 37/57; Bolton, Arredondo's Historical Proof, 218, 324).

is located, also without any means of defense, but with the same risks and duties of the others already mentioned.

"Although it is true that the entrance to these bars are narrow and of little depth of water for vessels of large draught, yet with eight feet of water that they have, it is quite sufficient for small vessels. Hence I judge it necessary that on both these bars, a lookout tower be built, with the necessary defense and protection for the guards thereof, for the better service of the object intended." 11

Arredondo returned to Florida in 1738 accompanied by Sublieutenant engineer-in-extraordinary Pedro Ruíz de Olano, 12 who had been appointed resident engineer in Florida. They came to strengthen the defenses so that they would withstand probable attack by the

11. Lanning, Diplomatic History, 45-46, 48, 51-52; Lowery, A Descriptive List, 271.

12. Pedro Ruíz de Olano began military service in 1730. On Dec. 11, 1735, he was promoted to sublieutenant engineer-in-extraordinary with an annual salary of 800 pesos, and six days later was ordered to Puerto Cabillo (Venezuela). Ruíz arrived there in March 1736 and began drawing the "Plano del Estado en que se hallan las obras del Fuerte de San Felipe de Puerto Cabello," which he signed jointly with Captain engineer-in-ordinary Juan Gayangos Lascari on Nov. 12, 1736. But then on Jan. 28, 1737, Ruíz complained to the crown that Gayangos was departing from the original design of the fort, that the engineer in charge did not allow him to participate in accounting for past construction expenses or estimating future expenses. Gayangos retorted that Ruíz had not wanted to finish the accounting, had absented himself without leave from his job, and lacked experience. On June 23, 1737, the crown transferred Ruíz to Florida. On his way there, he arrived in Habana on April, 1738. Engineer-in-ordinary Antonio de Arredondo joined him, and both arrived in St. Augustine on April 14. They decided jointly that the strengthening of Castillo de San Marcos, by constructing a vault-supported terreplein and a palisade on the north and northwest sides, was the most pressing need. Arredondo then left and Ruíz took charge of construction. In July he was diverted from his task by the need to replace Fort Pupo, unsuccessfully attacked by Indian allies of the British. Ruíz built a wooden blockhouse-like structure, as shown in his "Plano y perfil del nuevo Fortin de San Francisco de Pupo, situado en la orilla del norte del Río San Juan, siete leguas del Presidio de San Agustín de la Florida."

British. Jointly Arredondo and Ruiz decided that the most important task at hand was the "modernization" of Castillo de San Marcos, and thus the fortifying of Matanzas Inlet was given a very low priority, if considered at all. Arredondo returned to Habana via San Marcos

In October Ruiz returned to work at Castillo, and on Dec. 11 finished the first vault. By Oct. 24, 1739, he had completed the eight vaults in the east side, including the terreplein slab over them. By May 20, 1740, Ruiz had raised the two bastions on that side to match the curtain's new height, and built the parapet on all the new work. Then, war with Britain and lack of funds halted the "modernization" of Castillo. Ruiz promptly repaired the damage caused by the British bombardment in 1740 to the east parapet, and submitted his "Plano del sitio de la Florida." He continued working toward the completion of the palisaded covered way. In 1741, it was charged that the gunfire had destroyed the parapet because Ruiz made it thinner than required and put more sand than lime in the mortar. To repair it, he had expeditiously filled the holes with lime (rather than replacing parts of or whole merlons merlons). On Nov. 2, 1741, Ruiz was promoted to lieutenant engineer-in-ordinary with a salary of 1000 pesos. He participated in the invasion of Georgia in 1742, and on his return rebuilt the Cubo defense line and constructed the Hornwork Line. Late in 1748 or early in 1749, Ruiz petitioned the crown for return to Spain settlement of his pay, and promotion to engineer-in-second, considering that "eleven years of such a miserable presidio deserved some indulgence." Gov. Montiano forwarded the petition, pointing out that Ruiz had invested money during the war in equipping six privateers to go after British prizes. On Oct. 29, 1751, he was still in St. Augustine, but was a captain engineer-in-second. Ruiz departed for Habana on July 1, 1754, and was still there on May 12, 1756 (Zapatero, Puerto Cabello, 33-34, 34-35, 36, 37, 41, 43-44, 45, 60; Güemes to Torrenueva, April 8, 1738, SC, AGI 87-1-3/34; Montiano to id., May 28, 1738, SC, AGI 86-5-25/4; id. to Güemes, June 2, 1738, EFP, 37/43; id. to id., July 21, 1738, EFP, 37/68; id. to id., Oct. 26, 1738, EFP, 37/91; id. to id., Oct. 29, 1738, EFP, 37/103; id. to id., Jan. 4, 1739, EFP, 37/115; id. to id., April 7, 1739, EFP, 37/145; id. to id., Aug. 16, 1739, EFP, 37/154; id. to id., Oct. 24, 1739, EFP, 37/173; id. to id., March 25, 1740, EFP, 37/192; id. to id., May 20, 1740, EFP, 37/309; Ruiz to the crown, Aug. 8, 1740, SC, AGI 87-1-2/114; Montiano to Güemes, Aug. 12, 1740, EFP, 37/211; The inhabitants of Florida to the crown, Sept. 15, 1741, NC, AGI 58-1-36/40; Ruiz to the crown, (late 1748 or early 1749), SC, AGI 86-6-6/1; Royal officials of Florida to Ensenada, March 16, 1749, SC, AGI 86-7-21/48; Accountant José Antonio Gelabert, Tribunal of Accounts of Cuba and the Leeward Islands, to the crown, Jan. 10-14, 1752, SC, AGI 87-1-14/2; Cartografía de Ultramar, 4 vols. (Madrid: 1949-1957), II, map No. 64).

de Apalache and Ruiz took charge of the work on Castillo.¹³

No other event proved beyond doubt the strategical advantage of Matanzas Inlet than the British siege of St. Augustine in 1740. Although the siege did not begin formally until June 13, two British armed vessels began watching St. Augustine and Matanzas Inlets as early as May 15, and five others joined them on June 11. The Spanish suspected that those vessels would try to intercept the ships with food from Habana, for Cuba had been previously informed that full rations would run out on June 20. But as long as Matanzas Inlet remained unoccupied, there was a way to receive the food, and the Spanish were ready to fight there to keep the situation unchanged. British warships appeared on June 17 and sealed both inlets more tightly.¹⁴

The arrival of food from Habana via Matanzas Inlet took place inevitably through a succession of coincidental events. On July 7, the victuallers reached Mosquito Inlet, 60 miles south of St. Augustine. That same day, the vessel blockading Matanzas Inlet received orders, prompted by hazardous winds, to join the warships off St. Augustine Inlet. On its way to the squadron, the vessel saw the Habana ships at Mosquito but ignored them. That same night, a courier from Mosquito reached St. Augustine, and reported the arrival of the provisions, but nothing could be done immediately to fetch the food.¹⁵

A week later, when the half rations on hand would last only until July 30, the Spanish made their move. On July 13, five shallow-draft vessels departed for Mosquito Inlet to pick up some provisions. Meanwhile, two sloops had left the British squadron to find out whether Matanzas Inlet had sufficient depth for the sloops to lie in and fight in it. At 4 o'clock in the afternoon, the Spanish vessels exiting the inlet met the British sloops. The Spanish fought their way out, hugged the coast, and kept a running fusillade with the boats from the sloops until nightfall ensured their escape. Later in the night, the five vessels returned from Mosquito Inlet laden with 200 cargas (1030 bushels) of flour, and entered Matanzas Inlet unmolested because the British sloops had withdrawn. This improvisation at bringing in the food continued

13. Güemes to Torrenueva, April 8, 1738, SC, AGI 87-1-3/34; Montiano to id., May 28, 1738, SC, AGI 86-5-25/4; id. to Güemes, June 2, 1738, EFP, 37/43.

14. Id. to id., May 15, 1740, EFP, 37/200; id. to id., June 11, 1740, EFP, 37/201; id. to id., June 24, 1740, EFP, 37/202; id. to id., July 28, 1740, EFP, 37/205.

15. Ibid.; St. Augustine Expedition, 50, 51.

until the lifting of the siege on July 20 enabled the vessels at Mosquito to come to St. Augustine free of danger.¹⁶

16. Montiano to Güemes, July 28, 1740, EFP, 37/205; id. to the crown, Aug. 9, 1740, SC, AGI 87-13-12/22; St. Augustine Expedition, 52, 55, 57, 64.

CHAPTER II

THE BUILDING OF FORT MATANZAS, 1740-42

The unsuccessful British siege of 1740 had shown again the importance of Matanzas Inlet. The night the Spanish succeeded in entering the inlet with floor for St. Augustine, the half rations on hand would have lasted another 15 days only. Had the British seized the inlet at the outset, relief might have been prevented and the city starved into surrender. The Spanish expectation that there was hope of relief, as long as the inlet was unoccupied, had been fulfilled dramatically.¹⁷

British deserters in St. Augustine kept alive the rumor that their compatriots would make further attempts to capture the city. Consequently, perhaps early in the fall, Governor Manuel de Montiano and Engineer Ruíz concluded that an attack could very well have Matanzas Inlet as an early objective. More so if the enemy knew that the inlet was the only direction from which St. Augustine could be surprised, and that it was undefended. An established principle of war has always been to break through the least-guarded place. Having effected the penetration, the enemy could then land on the banks of the San Sebastián River, west of the city. That side was open because cannon fire from Castillo de San Marcos could not cover it.¹⁸

This reasoning convinced both Montiano and Ruíz that Matanzas Inlet should be fortified effectively. Fortifications, however, could not be erected without expressed royal permission, but obtaining timely approval of a request for such a task was highly improbable. Communication over the vast oceanic distance to Spain, consideration of the request by the bureaucracy, and return to Florida was subject to considerable delay. Meantime, an ascent through the "door open to the enemy" might injure higher royal interest.¹⁹

17. Montiano to the crown, Aug. 9, 1740, SC, AGI 87-3-12/22.

18. Ruíz to the crown, March 20, 1743, SC, AGI 87-1-2/115/35.

19. Ibid.

But Montiano had a recourse. In addition to Arredondo's 1740, the communication authorized Montiano to perform whatever repairs he judged necessary for the security and safeguard of St. Augustine. Advised by Engineer Ruíz, and probably a war council too, Montiano decided to build a fort at Matanzas Inlet. And he would begin it immediately and finish it as soon as possible.²⁰ No document has been found indicating that the crown was at the time informed of the momentous decision.

The date for beginning construction of Fort Matanzas is unknown. But since the decision was to start without delay, the fort was probably started that fall or in early winter. Anyway, work on the structure had been going on for some time in May 19, 1741, according to Spanish cavalryman Félix Aguilar.²¹

Aguilar had been captured four days earlier at Araquay, ²² just north of Fort Mose, by Creek allies of the British. His deposition before the bailiff of Frederica stated, among other things, that the Spanish had begun to "build at the Metanza's but was obligated to leave off for the Indians Disturbed them (so that) they could not go on".²³ The Indian disturbers, who thus occasionally interrupted construction, were probably the first to report to the English that the fortification of Matanzas Inlet was underway.

Occasional British cruising off Matanzas Inlet provided them with opportunities to destroy fledgeling Fort Matanzas. On July 21, 1741, the sloop St. Philip and a schooner from Frederica, with

20. Ibid.; Montiano to Del Campillo, March, 1743, SC, AGI 87-3-12/15.

21. "The Examination of a Spanish prisoner known by the Name of Brigadier taken before Thomas Marriott Bailiff of the Town of Frederica in Georgia this 8th May 1741" (May 19 in the Gregorian calendar), Georgia Colonial Records, XXXV, 373-378.

22. Aguilar stated he had been captured at the "village of Yarroway which lies just by St. Augustine ("The Examination"); In 1740 Oglethorpe wrote that he had withdrawn from the siege of St. Augustine by marching "gently on to the Brook by Yareway and that Evening to the Grove and the next Morning reached (Fort San Diego)" (St. Augustine Expedition, 165).

23. "The Examination."

84 officers and men of Oglethorpe's Regiment on board, sighted a Spanish sloop anchored in the inlet. They went for her but on reaching the inlet, darkness and fog were setting in and the time for action had passed. Before everything became hidden from view, however, they saw a galley in the inlet, which in the absence of a fortification, provided defense for that point. The galley fired several shots at long range. Boats were sent to reconnoiter the strength of the sloop, but returned without information.²⁴

On the 22nd, the British made their move. About 10 o'clock in the morning, with the fog clearing up, the St. Philip and the schooner saw the sloop clearly. The two vessels got the wind and bore toward the sloop intending to board her. She loosened her jib and main sail but ran aground. The British, coming in to an 11-foot depth, began a cannonade. As the crew of the sloop leaped ashore, two of them were killed and two wounded. Simultaneously the galley in the inlet opened fire. The St. Philip wanted to engage the galley, but the shallows restricted her maneuvers and her master got her out of the inlet only with difficulty.²⁵ Had the British engaged and defeated the galley, nothing could have stopped them from leveling the Fort Matanzas work.

The second time the British visited Matanzas Inlet they did not even try to enter, much less interfere with the construction of Fort Matanzas. On September 1, 1741, a sloop and a schooner, under General Oglethorpe himself, arrived off St. Augustine to punish Spanish privateers who had preyed on the Georgia coast. They found a privateer sloop and her prize, an English vessel, anchored outside St. Augustine Inlet, but the attempt to capture the privateer and retrieve the prize failed. Next day, the British coursed for Matanzas Inlet but found no privateers there. They then returned northward.²⁶ Perhaps the General did not want to be diverted from the principal objective of the cruise.

24. Georgia Colonial Records, XXXV, 351-352.

25. Ibid., XXXV, 352-353.

26. "A Ranger's Report of Travels with General Oglethorpe, 1739-1742," Newton D. Mereness, Travels in the American Colonies (New York: 1916), 229-230.

On a third occasion, the British came to Matanzas Inlet for the purpose of destroying unfinished Fort Matanzas, but the attack did not materialize. On December 27, 1741, General Oglethorpe departed from St. Simons on the sloop St. Philip. The schooner Walker followed later but when it came off St. Augustine Inlet about noon on the 31st, the St. Philip was not there. There were several vessels in the harbor and two half-galleys were on the alert, but they did not come out to the inlet. Castillo de San Marcos fired two guns at the schooner, which replied with two false fires.²⁷

The Walker then stood for Matanzas Inlet, hoping to meet with the St. Philip. It got there but the other vessel was nowhere in sight. That same night the schooner took a course to the north, toward the St. Johns River.²⁸ It is not known why the Walker failed to take action against Fort Matanzas, which was after all the objective of the cruise. Perhaps the commander felt no freedom to act in Oglethorpe's absence.

A fourth time the British returned to Matanzas Inlet, unequivocally committed to destroy the "Fort the Spaniards have began (sic) there and is not yet finished." After trying unsuccessfully to land on Anastasia Island, off St. Augustine, the British dropped southward to Matanzas Inlet. On September 10, 1742, two boats sounding the inlet got within range of the fort, but a cannon shot persuaded one of them to withdraw immediately, followed by the other a little later. That fire had not come from a one-gun galley or galleys, but from Fort Matanzas itself. The British had, as they later remarked with some understatement, "found the Spaniards had erected a new Fort."²⁹ On its first action, the new fort had indeed shown its effectiveness.

Fort Matanzas was situated on the small marshy island³⁰ which separated that part of the Matanzas River, north of the small island, leading to St. Augustine, from the other part, south of the island,

27. Ibid., 230.

28. Ibid., 230-231

29. Ibid., 236; Montiano to the crown, September 15, 1742, AGI SD 2541.

30. Ruíz to the crown, March 20, 1743, SC, AGI 87-1-2/115/35.

inner end of Matanzas Inlet,³¹ and due to the nature of the terrain, was built on wooden piling.³²

Various methods of providing stable subfoundations in unstable terrain had evolved through the centuries, and contemporary versions of such practices are discussed and illustrated in Bernard Forest de Belidor's 1729 engineering treatise. The piling construction, according to Belidor, consists of a regular pattern of sturdy poles sunk vertically to a depth sufficient for stability, and then capped with a grillage of squared timbers, upon which the masonry foundations of the edifice are then laid. Belidor also illustrates a simple timber grillage and caisson containments.³³ (Illus. 3)

The gundeck of Fort Matanzas rose four varas (11 feet) above the ground.³⁴ The south front (actually southeast) had a low parapet,³⁵ without embrasures or merlons.³⁶ The low parapet furnished little or no protection to either the gun or the crew, but this was compensated by simpler construction, easier service of the piece, and wider field of fire.³⁷ The east parapet was a breast-high wall

31. Parish Pastor Juan José Solana to the Bishop of Cuba, April 22, 1759, in Solana to Secretary of State for the Indies Julián de Arriaga, April 9, 1760, SC, AGI 86-7-31/41.

32. Ruíz to the crown, March 20, 1743, SC, AGI 87-1-2/115/35.

33. La Science des Ingenieurs, Book III, 55-58, and plate 8. Belidor was a commissary-in-ordinary of artillery and royal professor of mathematics in the French Artillery School.

34. Solana to the Bishop of Cuba, April 22, 1759.

35. (James) Moncrief, "A Plan of the Fort and Harbour of Matanzas, Distant from St. Augustine Five Leagues." 1765. During his inspection of St. Augustine (Sept. 10 to Oct. 6, 1763), Col. Robertson had ordered Engineer Moncrief to prepare drawings of the fortifications in East Florida (Robert R. Rea, "Lieutenant Colonel James Robertson's Mission to the Floridas, 1763, "Florida Historical Quarterly, July 1974, 36, 41, 42). Since there is no record that the British performed any work on the fortifications early in their occupation, Moncrief's plan of Fort Matanzas, transmitted to England on March 1, 1765 (Gov. James Grant to Lords of Trade, Public Record Office, Colonial Office 5/540, 178-207), shows the structure as the Spanish left it. (Illus. D-1)

36. José Almirante, Diccionario Militar (Madrid: 1869), 141-142.

37. Mariano Rubio y Bellvé, Diccionario de ciencias militares, 3 vols. (Barcelona: 1895-1903), I, 361.

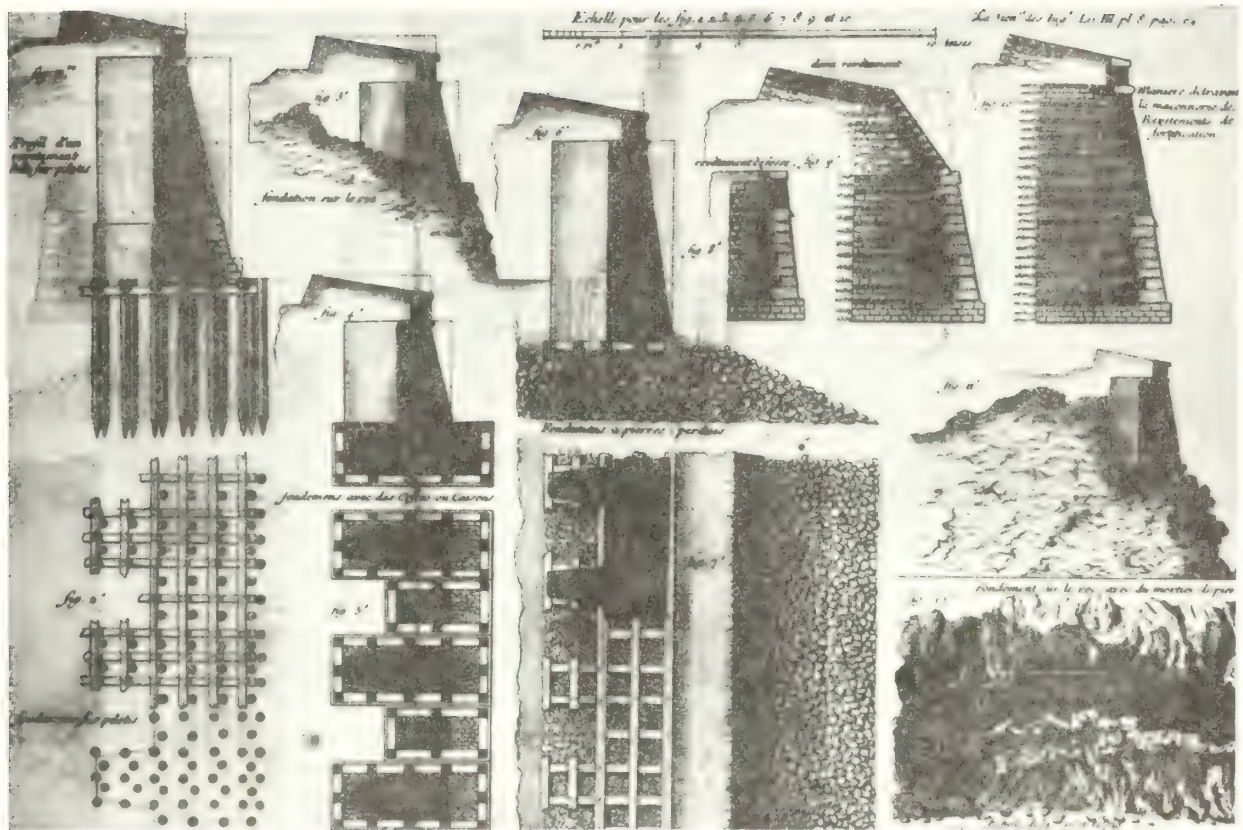


Illustration 3

Simple timber grillage and caisson containments as illustrated by Belidor. "Profil d'un revetement bati sur pilotis" (cross section of a scarp wall built upon piling) and "Fondemens sur pilotis" (Foundation on pilings) from La Science des Ingenieurs (1729), Book III, plate 8, figs 1 and 2 respectively. (See Appendix A for additional description.)

with two embrasures. Despite some indication to the contrary,³⁸ it had no firing steps; behind a breast-high wall they were not necessary. The west parapet was also a breast-high wall.³⁹

The ceiling of the tower section of Fort Matanzas was formed by a vault-like arch. A floor divided the tower into a lower and an upper story, which lodged the troops and the commanding officer respectively.⁴⁰ The lower room was at gundeck level, and a doorway permitted entry from the gundeck. The room had a window in its north wall. The upper room was reached via an outside wooden stairway against the south wall, starting at the west side of the gundeck. The stairway led first to a small, roofed landing just outside the door. There was a window in the north wall of the room, a hatchway to the roof in the center of the ceiling arch, and a small room at the west side⁴¹ for provisions storage and as entry to the munitions storage. The little fort also had room, under the gundeck, for a cistern to store water for use in case of siege.⁴² The fortification had capacity for 50 men and six cannon.⁴³

Fort Matanzas had other architectural features. The features are not mentioned in the sources dealing with the structure during the first Spanish period, but later sources show they were integral parts of the fort and must be mentioned. There were observation/ventilation/musketry loopholes in the wall west of the door to the lower room and a window to the east. The cylindrical space that was the magazine, in the west wall of the tower section, rose from the lower room level. There was a wooden sleeping platform at the west side of the room and a fireplace in the east wall. In the upper room, there were loopholes on each side of the door. The hatchway to the roof had a housing over it, and a wooden drainpipe conducted the rainwater from the roof down into the cistern.

38. Moncrief, "A Plan of the Fort and Harbour of Matanzas."

39. No opening in the west wall shows in the record prior to 1789. It is uncertain whether the later opening was an embrasure or merely an entry. It might have been both (Albert C. Manucy, "Completion Report, Matanzas Scale Model" (St. Augustine: Southeastern National Monuments, March 28, 1951), 3-7). See Illustration 13.

40. Solana to the Bishop of Cuba, April 22, 1759.

41. Moncrief, "A Plan of the Fort and Harbour of Matanzas."

42. Ibid.; Solana to the Bishop of Cuba, April 22, 1759.

43. Montiano and Treasurer Juan Esteban de Pena to Viceroy Count Fuencilara of Nueva España, March 26, 1743, NC, AGI 58-1-32/37.

The completion of Fort Matanzas was belatedly reported in 1743 by both Governor Montiano and Engineer Ruiz in individual letters. Montiano explained that his decision to fortify Matanzas Inlet had aimed also at securing an avenue of communication with Habana, in the event St. Augustine Inlet became blockaded. The royal letter of May 24, 1740 had been his authority for his course of action. He hoped the king would approve because benefits were accruing to St. Augustine by the presence of the new fortification. For one thing, there was now no worry about an unfortunate event taking place at the inlet.⁴⁴

Engineer Ruiz wrote the same day and complemented the governor's letter. His advice has assisted the governor in reaching the decision to fortify. He explained how the enemy might have surprised St. Augustine due to lack of a defense at Matanzas Inlet, and that concern had prompted proceeding with construction before giving notification. He was transmitting a plan and cross section of Fort Matanzas and a map showing Matanzas Inlet, the Little Inlet and the small island of El Peñón, and part of Anastasia Island, so that the king would know where the fort and the other sites were located. Ruiz hoped that the decision to fortify would be held as a sound one and approved.⁴⁵ The plan and the map have not been found in Spanish archives.

The number of guns emplaced at Fort Matanzas upon its completion was only five, and the reported capacity for six guns was never filled during the first Spanish period. There were reports in 1745, 1746, 1747, 1748, and 1759 to the effect that four 6-pounder and one 18-pounder iron cannons were the armament of the structure. The report of 1759 states further that all the guns "point to the mouth of the port (Matanzas Inlet), more than a musket shot away." This may explain the "so withering a fire" received by the British in attempting to enter the inlet in 1742. In 1763, there were still five guns at Fort Matanzas.⁴⁶

44. Montiano to Del Campillo, March 20, 1743, SC, AGI 87-3-12/51.

45. Ruiz to the crown, March 20, 1743, SC, AGI 87-1-2/115/35

46. Montiano to De la Ensenada, Jan. 21, 1745, SC, AGI 87-3-12/70; id. to id., Jan. 15, 1746, SC, AGI 87-3-12/76; id. to id., Jan 24, 1747, SC, AGI 87-3-12/83; id. to id., July 20, 1748, SC, AGI 87-3-13/2; Solana to the Bishop of Cuba, April 22, 1759; "Report of Lt. Col. James Robertson to Maj. Gen. Thomas Gage, March 8, 1764," PRO, CO 5/83, in Ricardo Torres Reyes, "British Garrison of St. Augustine 1763-1784" (Denver National Park Service, 1972), 75; Rea, "Robertson's Mission," FHO, July 1974, 33-48.

There never was a full complement of 50 men at Fort Matanzas. On May 14, 1759, the detachment stationed there consisted of a cabo (officer in charge),⁴⁷ four privates of infantry, and two gunners. By 1763, however, the total number had increased to 10 men.⁴⁸ The increase may have been prompted by the Spanish declaration of war on Great Britain a year earlier. Seven men in peace time or 10 in war time still seem insufficient to operate all five guns simultaneously if necessary. Perhaps the 50-man capacity mentioned in 1743 referred to the number required to man the guns in a clearly critical situation, with the difference made up by reinforcements from St. Augustine.

No information has been found dealing with repairs or remodeling performed on Fort Matanzas between 1742 and 1763.

47. Not to be confused with cabo de escuadra (corporal). During the first Spanish period, the term cabo by itself meant head, chief, commander, commanding officer, or officer in charge (Almirate, Diccionario, 204-205; Rubio, Diccionario, I, 493-494); That the cabo was without doubt an officer is confirmed by the statement to the effect that the Spanish kept a lieutenant in command at Fort Matanzas (Bernard Romans, A Concise Natural History of East and West Florida (New York: 1775; Gainesville: 1962), 266).

48. Gov. Lucas de Palacio to Arriaga, May 14, 1759, SC, AGI 87-1-14/3; "Robertson's Report," in "British Garrison," 75.

CHAPTER III

FORT MATANZAS PLAYS ITS PART, 1742-63

The debut of Fort Matanzas in battle resulted from the British attempt in 1742 to destroy the structure, which they believed had not yet been finished. The event has been treated briefly earlier to set the date of completion of the fortification.

The attempt is now treated fully in order to show the development of the encounter at Matanzas Inlet. On September 6, twelve warships and other vessels from Carolina and Georgia, seeking reprisal for the Spanish invasion of the latter, anchored off St. Augustine Inlet. Two days later, at high tide in the morning, several small craft escorted by eight warships, headed directly for the channel to land men on Anastasia Island, for they had orders not to go over the bar. The fire from six Spanish half-galleys in the inlet and batteries at its entrance turned back several landing attempts until nightfall ended the contest.⁴⁹

On the 9th, the British sailed southward and anchored off Matanzas Inlet, intending to destroy the fort under construction there. On September 10, two boats, one of them with General Oglethorpe on board, rode a heavy swell into the inlet to sound it. Reaching a point 3 1/2 fathoms deep, within range of the "unfinished fort," the boats suddenly found themselves warned by a cannon shot fired from the now completed Fort Matanzas. One of the boats turned back immediately and the other did the same a very short time later. The weather got worse preventing any attempt at landing that day. The next day, "the Sky looked very wild and seemed to threaten a hard gale," so the British vessels withdrew to their respective stations.⁵⁰ Fort Matanzas itself had done well regardless of the assistance rendered by the weather.

Fort Matanzas became a British objective a second time, but on this occasion it did not fire a single shot. On April 8, 1743, at

49. "Ranger's Report," Mereness, 236; "A Short Account of the late Spanish Invasion of Georgia," Georgia Colonial Records, XXXVI, 64-65; Montiano to the crown, September 15, 1742, AGI SD 2541.

50. Ibid.

3 o'clock in the afternoon, one ship and four schooners closed in on St. Augustine Inlet. A cutter, with General Oglethorpe on board, went toward the Anastasia Island shore looking for a landing place, but found that the high sea made a landing impossible.⁵¹

The vessels then approached Matanzas Inlet. Before the night fell, they saw a galley lying within the inlet. Next day, the five vessels neared the inlet, saw the galley again, and at noon spotted a large cloud of smoke (a signal?) made by the Spanish. At 4 in the afternoon, with only little wind from the east, the vessels began rowing toward the inlet. Nightfall was approaching and they were still well offshore. Oglethorpe sent the cutter ahead to reconnoiter. She soon returned and reported sighting the galley, and the "Sea ran Mountains high on Shore." Thus vanished all possibility of a landing.⁵²

On April 10, at 8 in the morning, the British vessels returned to the bar off St. Augustine Inlet. A galley and two half-galleys waiting in the inlet invited attack. An attempt to land and get them from the shore was considered, but the sea still ran so high that the idea was dropped. The vessels finally bore away for the St. Johns River.⁵³

After 1743 there were no more major attacks against either St. Augustine or Fort Matanzas. However, following the outbreak of the Seven Years' War in 1756 (The French and Indian War in English America), Indian allies of the British occasionally raided the environs of St. Augustine, despite the prevailing peace between Spain and Britain. Whether the raids extended as far south as Fort Matanzas is not known.⁵⁴

Spain joined the war against the British in 1762 and met defeat. Consequently she turned Florida over to Britain in 1763.

51. Edward Kimber, A Relation or Journal of a Late Expedition to the Gates of St. Augustine on Florida. Reprinted from the original edition, London, 1744 (Boston: 1945), 31-32.

52. Ibid., 32-33.

53. Ibid., 33.

54. TePaske, The Governorship, 154-155.

Subsection B:

THE BRITISH AT FORT MATANZAS, 1763-84

by

John C. Paige

Denver Service Center
Denver, Colorado
October 1978

THE BRITISH AT FORT MATANZAS, 1763-1784

"In consequence of the restitution stipulated in the preceeding article, his Catholic majesty cedes and guaranties, in full right, to His Britannick majesty, Florida, with Fort St. Augustin, and the bay of Pensacola, as well as all that Spain possesses on the continent of North America, to the east, or to the south east, of the river Mississippi." With these words of Article Twenty of the Treaty of Paris signed on February 10, 1763, Fort Matanzas as an outpost of Fort St. Augustine became a British possession.¹

General Jeffrey Amherst, British Commander-in-Chief in North America, planned to use the newly acquired port of St. Augustine as a bastion against any possible future intrigues that Spain might plot against British North American colonies. In order to accomplish this goal, Amherst was interested in knowing precise information about the conditions of the defenses of the newly acquired British possessions.² In the case of St. Augustine, this did not occur until after July 20, 1763 when "the Spaniards delivered up St. Augustine with their national pomp and ceremony desiring military honours be paid to the pictures of the King and Queen of Spain which was readily granted and all honours they could wish."³ Shortly after this formal surrender Matanzas as one of the outer defenses of the fort was taken over by the British occupational forces.

1. Robert L. Gold, Borderland Empires in Transition: The Triple-Nation Transfer of Florida (London: Southern Illinois University Press, 1969), p. 195. The treaty ended the Seven Years War better known in America as the French and Indian War. Originally, the war involved just Great Britain and France, but Spain was drawn into the conflict in 1762 after signing a treaty with France. Spain was unprepared for the war and soon lost Havana in Cuba and Manila in the Philippines. In order to regain possession of Havana, Spain relinquished both East and West Florida at the conclusion of the hostilities.

2. Herbert E. Bolton and Thomas Marshall, The Colonization of North America, 1492-1783 (New York: The MacMillan Company, 1920), p. 403; Ricardo Torres-Reyes, British Garrison of St. Augustine, 1763-1784 (Denver: Denver Service Center, 1972), p. 1.

3. Blair to Gage, November 4, 1763, Gage Papers, American Series, Vol. IX, William L. Clements Library, University of Michigan, Ann Arbor, Michigan.

The Treaty of Paris allowed the Spanish to remove their artillery and other effects from the ceded territory, but before the Spanish troops embarked from Florida, British Major Francis Ogilvie made an accounting of the Spanish weaponry. He estimated that the Spaniards had upward of 130 guns of different calibers at Fort St. Augustine, outposts of the fort and town of St. Augustine of which 82 were mounted on carriages.⁴

In order to carry out Amherst instructions of surveying the newly acquired forts, Lieutenant Colonel James Robertson, Deputy Quartermaster General, came to inspect the new British holdings of East and West Florida. Amherst instructed Lt. Col. Robertson that:

Your chief business at St. Augustine after you have delivered the Commanding Officer my dispatches, will be to inform yourself of the particular state and condition of the Fortifications and other public works, belonging to the place: the number of troops necessary for it; what guns; artillery and etc. are there at present.⁵

During his inspection of St. Augustine in the summer of 1763, Lt. Col. Robertson traveled to Fort Matanzas. He wrote of the fort:

Matanzas is a tower, where the Spaniards had five guns which they have taken away, the garrison sends ten men hither, it serves to guard the lower bar at the south of the Island. I hope Mr. Moncrief and Pittman will bring me plans of these which they have taken by my directions, but probably may not have finished when the vessels sails.⁶

Robertson's official report of March 8, 1764 did not substantially add to his earlier description except to note that Fort Matanzas lay five leagues to the north of Fort St. Augustine and that the plan and section of the fort and its environs had been completed and sent to Major General Thomas Gage, the Commander-in-Chief of the British forces in America.⁷

4. Gold, Borderland Empires in Transition: The Triple-Nation Transfer of Florida, p. 195; Liets to Ogilvie, August 1, 1763, C. O. 5/548/15, Library of Congress, Washington, D. C.

5. Amherst to Robertson, August 24, 1763, Amherst Papers. Series I, William L. Clements Library, University of Michigan, Ann Arbor, Michigan.

6. Robertson to Amherst, September 26, 1763, Amherst Papers, Series I, William L. Clements Library, University of Michigan, Ann Arbor, Michigan.

7. Robertson to Gage, March 8, 1764, C. O. 5/83/145, Library of Congress, Washington, D. C.

The plan of Fort Matanzas sketched by Engineer James Moncrief for Lt. Col. Robinson shows a small rectangular masonry fort with a two-story tower on the north side of the terreplein. The section taken depicts two embrasures on the east parapet wall with firing steps located between the embrasures. The second story of the tower was reached by an outside stairway with a covered entrance way. The interior plans show two small windows in the center of the building on the north wall with the first floor window directly below the second story window. Directly above the second story window and in the center of the roof is an access to the top of the tower. Also in the second story is a floor to ceiling partition on the east side of the room. The drawing shows no ordnance at the fort.⁸

Since the Spanish removed the artillery from Fort Mantanzas, Major Ogilvie requested that two iron 6-pounders be sent for use at Montanzas. He feared that:

In case of an Indian War the small artillery are absolutely necessary for the defence of the advance Posts, you may be assured, I'll do every thing in mu power for securing these posts in the best manner possible.⁹

The ordnance had not arrived by spring and Major Ogilvie wrote to General Gage: "I beg leave to send you a list of Ordnance absolutely wanted to the advanced Posts of East Florida Viz. for Metanzas 6 or 4 pounders 2,"10 The requested guns were sent, but another setback occurred when the ship Industry carrying the needed araments sank near St. Augustine. This distressing news was sent to General Gage, who replied:

We must endeavor to repair our losses as we are able. The Vessel which brought your express returns to you immediately with as much Provisions as she can hold; and if small Artillery can be provided before she sails, you will receive them by the same opportunity: If not you may expect those pieces of ordnance by the next vessel which will go hence: and I hope we shall have one ready in a few days to carry a fresh assortment of stores for all the forts in Florida . . .¹¹

8. The plan and section can be found in the architectural section of the Historic Structure Report. (Illustration D-1)

9. Ogilvie to Gage, December 17, 1763, Gage Papers, American Series, Vol. XI, William L. Clements Library, University of Michigan, Ann Arbor, Michigan.

10. Ogilvie to Gage, March 25, 1764, Gage Papers, American Series, Vol. XIV, William L. Clements Library, University of Michigan, Ann Arbor, Michigan.

11. Gage to Ogilvie, June 2, 1764, Gage Papers, American Series, Vol. XIX, William L. Clements Library, University of Michigan, Ann Arbor Michigan.

Finally on June 21, 1764, the sloop Live Oak left from New Uork with the needed artillery for St. Augustine and the dependent forts. This ship arrived safely and presumably the weapons delivered to all posts including Matanzas. At least by June 1765, the fort listed the armament of two iron 6-pounders.¹²

After the armaments were in place, an artilleryman was stationed at the fort with a small garrison. This British garrison at Matanzas fluctuated slightly during the period of occupation with the exception of a large body of troops being stationed at the post toward the end of the British occupation. The British Ninth Regiment reported six companies in St. Augustine with detachments at the outer posts like Matanzas in 1764. In 1765, the disbursement of troops were listed more minutely with the garrison at Matanzas listed as having one sergeant and eight privates. The number decreased to one sergeant and six privates of the Ninth Regiment and one private of the Royal Artillery by February of 1768, and then in May another artilleryman joined the Matanzas garrison. The composition of the Matanzas garrison again changed in 1774 when the occupation force consisted of one corpal and five privates and the following year, the post was garrisoned by one less private. However, the Matanzas garrison would be increased during the American Revolution.¹³

12. Gage orders to Jonathan Lawrence Master of Sloop Live Oak June 21, 1764, American Series, Vol. XX, William L. Clements Library, University of Michigan, Ann Arbor, Michigan. Gage to Ogilvie, June 21, 1764, American Series, Vol. XX William L. Clements Library, University of Michigan, Ann Arbor Michigan. Torres-Reyes, British Garrison of St. Augustine, 1764-1784, p. 17.

13. Torres-Reyes, British Garrison of St. Augustine, 1763-1784, p. 17; "Present Dispositon of Four Regiments Stationed in East and West Florida", February 11, 1764, Gage Papers, American Series, Vol. XXIX, William L. Clements Library, University of Michigan, Ann Arbor, Michigan; "Return of all His Majesty's Forces Quartered in the Province of East Florida as of 1 February 1768," May 1, 1768, Gage Papers, American Series, Vol. LXXVI, William L. Clements Library, University of Michigan, Ann Arbor, Michigan; "State of His Majesty's Forces in the Province of East Florida", March 7, 1774, C. O. 5/554/19, Library of Congress, Washington D.C.; "Return of His Majesty's Forces in the Province of East Florida", July 21, 1775, C. O. 5/555/231, Library of Congress, Washington, D. C.

In the months prior to the colonies revolting openly against Great Britain, military preparations began in earnest at St. Augustine with barracks built and fortifications strengthened. Undoubtedly, some work was then done at Matanzas, but official letters and reports comment only vaguely on work being done to outer defenses of Fort St. Augustine and never specify Matanzas by name. St. Augustine had not always been a center of bustling British military activity for earlier, General Gage contemplated reducing the military importance of St. Augustine and thereby indirectly Fort Matanzas. In 1769, General Gage wrote to General Frederick Haldimand, Commander of the British Southern District, that:

St. Augustine is not to be looked upon as a place of that consequence as to require so many troops to be constantly kept there; it is only a temporary station for troops in time of peace, from whence the greater part will be removed, whence they are wanted for other services.¹⁴

This negative attitude toward St. Augustine also existed in London for the Earl of Hillsborough wrote to General Gage that because of the inconvenience of transporting troops and supplies to St. Augustine, it appeared very doubtful that the town would ever be a principal military station.¹⁵ However, as the other British colonies began their revolt against the crown, St. Augustine became more important to the British in their attempt to maintain their hold on the colonies in North America. The reason for this was that East and West Florida remained loyal to Great Britain during the American Revolution, and thus Pensacola and St. Augustine became important military posts for housing soldiers and harboring refugee loyalists fleeing from persecution in the colonies in rebellion against the United Kingdom. As the time of open rebellion drew near, the British began to bolster their defenses in East and West Florida, and these efforts included an inspection of the fortifications at St. Augustine and Fort Matanzas in 1774. It was reported that many of the defenses of St. Augustine were in disrepair, but Fort Matanzas was found to be in good order.¹⁶

14. Gage to Haldimand, December 23, 1769, Haldimand Papers, Correspondence with General Gage, 1758-1777, Vol. III, P.L. Yonge Library, University of Florida, Gainesville, Florida.

15. Hillsborough to Gage, January 18, 1770, Gage Papers, English Series, Vol. XVI, William L. Clements Library, University of Michigan, Ann Arbor, Michigan.

16. Whitmore's "State of Fortifications at St. Augustine", undated circa, 1774, Halimand Papers, P. L. Yonge Library, University of Florida, Gainesville, Florida.

The American War for Independence began in the spring of 1775, both military, and civilian authorities in East Florida feared an invasion of the province. Patrick Tonyn, Governor of East Florida, wrote:

To be silent on the intelligence I have been able to procure would be highly blamable, it has been I am confidently assured, in contemplation in Carolina to attack this Province, in order to get possession of the Ordnance stores in this Fort, to burn the Barracks, of course the town.¹⁷

These same thoughts were expressed by the military commander of the town, except he believed the threat to East Florida came from Georgian troops. These fears proved premature, but in 1776 American forces planned an attack on East Florida. The plan was not executed until 1777 at which time the British regulars and East Florida Rangers defeated the American troops.¹⁸

Despite this victory, the British feared in 1778 that the Americans would launch another invasion attempt of East Florida. In May, Governor Tonyn wrote asking for military assistance in the following manner: "It is absolutely certain that a Rebel Army of considerable Force provided with artillery are upon their March to invade this Province--

17. Tonyn to Copper, September 15, 1775, C.O. 5/555/365, Library of Congress, Washington, D.C.

18. Shirreff to Robertson, September 25, 1775, Intercepted Letters 1775-1781, Vol. I, United States Continental Congress, Papers of the Continental Congress, 1774-89, National Archives, Washington, D. C., microfilm, Roll 65, Item 51, p. 103; Hugh M'Call, The History of Georgia: Containing Brief Sketches of the Most Remarkable Events Up to the Present Day (1784; reprint ed., Atlanta, Georgia: A.B. Caldwell, 1909), pp. 323-324; Charles Loch Mowat, East Florida as a British Province, 1763-1784 (1943; reprint ed., Gainesville, Florida: University of Florida Press, 1964), pp. 107, 120-121. These works discuss in more detail the invasions of East Florida by the Americans and the counter-attacks by the British. For a general overview of the American Revolution in Florida see J. Leitch Wright, Jr. Florida in the American Revolution (Gainesville: University of Florida Press, 1975).

This is no time to hesitate or delay." This anxiety was more than justified for the Continental Congress had been discussing plans for the reduction of East Florida and in June, their plans were put in motion as Major General Robert Howe and Colonel Elbert with a force of between two and three thousand men approached Florida along with a small naval armada carrying eight hundred men. Once again the British forces were able to beat back the invasion in pitched battle and the American forces withdrew from the province by July 11, 1778.¹⁹

The members of the Continental Congress were not discouraged by this setback and continued to make plans for the military reduction of East Florida. The Marquis de Bretigny wrote to the Continental Congress that; "The tranquility of Georgia and the Interest of Carolina require the reduction of St. Augustin." The Marquis then outlined a plan to accomplish this feat. The plan was for a large invasion force to move toward St. Augustine from Georgia and surround the town of St. Augustine, burning the houses outside of the fort. Thus driving the civilian population of women, Negroes and children to seek refuge in the fort. As the Marquis believed that the fort had no fresh water source and inadequate supplies, he thought that it would take only three or four months to starve the besiged garrison into submission. Once St. Augustine was surrounded on three sides then". . . as a great precaution, it would be necessary for a small armed vessel should cruise off of Fort Mantanee (sic. Mantanzas) which is twelve miles to the Southward, and according to circumstances an attempt might be made to carry this fort by landing 3 to 400 men, if this succeeds the enemy will be enclosed on four sides."²⁰

19. Tonyn to Faitt, May 16, 1-78, C.O. 5/80/57, Library of Congress, Washington, D.C.; Mowat, East Florida as a British Province, 1763-1784, p. 122.

20. Memorial and particulars relative to Ft. St. Augustine with a plan of attach, by Marquis de Bretigny, August 26, 1778, U. S. Continental Congress, Papers of the Continental Congress, 1774-89, National Archives, Washington, D. C., microfilm, Roll 91, Item 78, Vol. III, pp. 51-58, 59.

While the Continental Congress debated the merits of this proposal, additional information was submitted by Baron de Randerobe de Thrilleirs concerning the St. Augustine military situation. Thrilleirs, having been at Fort St. Augustine, recommended that while an attack was feigned on the North side of the fort, a small group of men could capture the signal tower and then using small vessels row from Anastasia Island, thus avoiding Fort Matanzas, to St. Augustine. Then they would rush into the fort and capture it before the British could muster enough troops to stop them.²¹

Neither of these plans were put into execution because the British forces launched an attack in November of 1778 that captured the rebel held city of Savannah, Georgia. This campaign by the British effectively ended the American threat to East Florida for the remainder of the Revolutionary War.²²

During the period of time when the American forces appeared as a threat to British St. Augustine, there was little or no British work done at Matanzas except for maintenance. The reason for this apparent lack of concern might be found in a 1775 description of Fort Matanzas. A visitor to the fort commented:

Between nine and ten miles further is the look out or fort of Matances, (sic. Matanzas) on a marshy island, commanding the enterance of Matanca, which lays opposite to it; this fort is to be seen at the distance of five leagues, it is of very little strength. nor need it be otherwise, as there is scarce eight feet water at the best of times on this bar: the Spaniards kept a Lieutenant's command here; the English a Sergeant's.²³

21. Memorial from Baron de Randerobe de Thrilleirs, October 20, 1778, U.S. Continental Congress, Papers of the Continental Congress, 1774-89, National Archives, Washington, D.C., microfilm, Roll 52, Item 41, Vol. X, p. 29.

22. Mowat, East Florida as a British Providence, 1763-1784, pp. 122-123.

23. Bernard Romans, A Concise National History of East and West Florida (1775, Reprint by Gainesville, Florida: University of Florida Press, 1962), p. 266.

Thus a sand bar prevented large vessels from using the river and so the British possibly believed that no enemy could attack from this point.

A more menacing threat than the American forces became the resurgence of a hostile Spain. Lord George Germain, the British Colonial Secretary, warned the Governor of East Florida as early as June of 1779 that the Spanish threatened hostile action against England, and St. Augustine and its dependent forts should prepare for a possible attack. In response to this new threat, the garrison at Fort Matanzas was increased to a total of eleven men in the fall of 1780 which included one sergeant, nine rank and file soldiers and one artillery gunner. The situation worsened when the Spanish captured West Florida, and East Florida military officials feared that Fort St. Augustine would become the next target for Spanish military aggression. They desperately began working on refurbishing and building new fortifications at St. Augustine; however, in official correspondence no mention is made of any work being done at Fort Matanzas through most likely some activity did take place there.²⁴

The increase in military preparedness could be seen at Fort Matanzas in the fact that in late 1782, Fort Matanzas was described in the following way:

...South of Augustine- is Matanzas Inlet defended by a stone fort-built in the middle of the Channel, having an Officer and 25 Men from the Garrison- it is the only inlet accessible for Gallies or small Craft-coming with forces to attack St. Augustine...²⁵

24. Germain to East Florida, June 17, 1779, C.O. 5/80/227, Library of Congress, Washington, D.C.; "Monthly Returns of His Majesty's Forces in East Florida", October 24, 1780, C.O. 5/560/127, Library of Congress, Washington, D.C.; Knox to Brown, September 1, 1781, C.O. 5/82/436, Library of Congress, Washington, D.C.; Brown to Clinton, October 28, 1781, C.O. 5/82/567, Library of Congress, Washington, D.C.; Tonym to Clark, January 22, 1781, C.O. 5/56/196, Library of Congress, Washington, D. C.; Moncrief to Clinton, September 30, 1781, James Moncrief's Letter-book 1780-82, William L. Clements Library, University of Michigan, Ann Arbor, Michigan; Tonym to Clark, January 22, 1781, C.O. 5/560/196, Library of Congress, Washington, D.C.; Tonym to Germain, March 5, 1781, C.O. 5/560/192, Library of Congress, Washington, D.C.; Tonym to Germain, March 21, 1781, C.O. 5/560/240, Library of Congress, Washington, D.C.

25. F.P. Fatio, Considerations on the Importance of the Province of East Florida to the British Empire (on the supposition that it will be deprived its Southern Colonies) By its Situation on, its produce in Navals Stores, Ship Lumber, & the Asylum it may afford to the Wretched and Distressed Loyalists, December 14, 1782, C.O. 5/560/915, Library of Congress, Washington, D.C.

Obviously by this time the sand bar problems had been alleviated due to shifting currents of the Matanzas River. The British activity at Matanzas continued to increase and Brigadier General Archibald McArthur, the British Commander at St. Augustine, in 1783 decided to reinforce the fort at Matanzas Inlet as he believed the fort to be the key to holding St. Augustine. He established the fort as headquarters for an officers' party and provided the fort with two eighteen-pounders. Brigadier General McArthur then upgraded the garrison at Matanzas by stationing a captain and thirty men at the fort. Also, a large and small galley were to be stationed in the harbor to support the troops. The soldiers probably were not all at the fort, but some may have slept in the galleys. Speculation has been made that the British also modified the Southeastern parapet by thickening the parapet walls with wood and earth construction and then sealed the openings of the other embrasures.²⁶

The British work at Matanzas could still have been minimal because negotiations were underway--even as Matanzas was being strengthened -- for the British to evacuate East Florida. Undoubtedly, Brigadier General McArthur wanted to establish Matanzas as a British strong point during the removal of troops and artillery from St. Augustine. Originally, Governor Tonyn expected the province to be evacuated in June of 1782, but the flood of loyalists seeking refuge in the colony prevented for the moment this course of action.

Negotiations continued between France, England and Spain with the English government deciding that retaining possession of Gibraltar would be worth the sacrifice of East Florida. The governor of East Florida was notified in February of 1783 that the province was to be given back to Spain and that he was to act "... in concert with the Commanding Officer of the troops and make all necessary Preparations for removing the Artillery, and all other effects belonging to His Majesty.... Upon these and other Points, I shall have the honor to signify to you the King's further pleasure, as soon as the Definitive Treaty is signed." ²⁷

26. Wilbur Henry Siebert, Loyalist in East Florida, 1774 to 1785; The Most Important Documents Pertaining Thereto, Edited with and Accompanying Narrative (1929; reprint ed., Boston, Massachusetts: Gregg Press, 1972), Vol. I, p. 121; Historian to Superintendent, Southeastern National Monuments, March 28, 1951, Completion Report File, Administrative Office, Castillo de San Marcos National Monument.

27. Whitehall to Governor of East Florida, February 7, 1783, C.O. 5/560/453, Library of Congress, Washington, D.C.

The Definitive Treaty was signed by Great Britain and Spain in Paris on September 3, 1783. The English were to surrender the Fort at St. Augustine and its dependent forts to Spain, but keep the right to remove all weapons from the forts as the Spanish had done some twenty years before. It was not until July 12, 1784 that Spanish troops under Governor Vicente Manuel de Céspedes took possession of St. Augustine with its outpost of Fort Matanzas.²⁸

During the time of British occupation of East Florida, Fort Matanzas was an outpost of an isolated British garrison. The British even contemplated reducing if not abandoning the Fort at St. Augustine and along with it Fort Matanzas, but the coming of the American Revolution increased the military significance of St. Augustine. Despite the increase in military activity in East Florida, the province was still only of minor importance and as the war drew to a close, it was used as an expendible bargaining piece during the negotiations preceding the Treaty of Paris. Therefore, Fort Matanzas was only minimally maintained by the British with increases in garrison troopers and construction activity coming only shortly before the fort was surrendered to the Spanish.

28. James Grant Forbes, Sketches, Historical and Topographical, of the Floridas; More Particularly of East Florida (1829; reprint ed., Gainesville: University of Florida Press, 1964), p. 192.

Subsection C:
THE SECOND SPANISH PERIOD OR
THE DISINTEGRATION OF FORT MATANZAS, 1784-1821

by
Luis Rafael Arana

Castillo de San Marcos National Monument
St. Augustine, Florida
October 1978

FOREWORD

This study deals with construction and repairs performed on Fort Matanzas, near St. Augustine (Florida), in 1784-1821. It is the third of five subsections constituting the historical data section of a historic structures report on that fortification. The subsections correspond with the time periods during which Spain, Great Britain, and the United States held sovereignty over Florida. Those periods are (1) the first Spanish, 1513-1763; (2) the British, 1763-1784; (3) the second Spanish, 1784-1821; and (4) the American since 1821. The latter period, however, has been cut off in 1933 to correspond with the ownership of Fort Matanzas by the U.S. War Department, and period/subsection (5) has been added to parallel the ownership by the Department of the Interior since 1933. This study implements in part the proposal contained in Package FOMA 104.

Mr. Bruce S. Chapell, University of Florida's P. K. Yonge Library of Florida History, pointed out the location of the correspondence to and from the commanders at Fort Matanzas in the unpublished East Florida Papers for the period of this study. Without his assistance, time would have been lost checking out the probable locations of that correspondence.

TABLE OF CONTENTS

FOREWORD.	53
LIST OF ILLUSTRATIONS	57
CHAPTER I: SUFFICIENCY, 1784-1795.	59
CHAPTER II: DECLINE, 1796-1810	69
CHAPTER III: COLLAPSE, 1811-1821	75
APPENDIX B: Ordnance Material at Fort Matanzas, 1784-1821. . .	255
APPENDIX C: The Furnishings of Fort Matanzas, 1784-1821. . .	261
BIBLIOGRAPHICAL ESSAY	500

LIST OF ILLUSTRATIONS

Illustration

4. William Gerard de Brahm, "A Plan of Part of the coast of Florida, including St. Johns River, from an Actual Survey, 1769" 58

5. Rafael Llobet, "Plano, perfiles y elevación de la Torre de Lerma...en Campeche (México)," October 2, 1789. Use of an entrance ladder to get into Fort Matanzas must have been essentially the same as in Torre de Lerma, where the ladder was located on the side of the tower opposite the sea, as at Matanzas. 64

13. Photo M-235 of model showing Fort Matanzas probably as completed in 1742, depicting structural features mentioned in the report 199

7. U.S. Coast and Geodetic Survey, Matanzas Inlet Quadrangle, August 1882. 94

- D-3. Photo M-42 of Harry Fenn's drawing of ruined Fort Matanzas, published in Picturesque America (1874) 273

- D-4. Photo M-54 of ruined Fort Matanzas, July 23, 1912. . . 274

- D-5. Photo M-55 of ruined Fort Matanzas, July 23, 1912. . . 275

- D-2. Ramon de la Cruz, "No 5, Torre de Matanzas con su barra," (June 4, 1821) 272

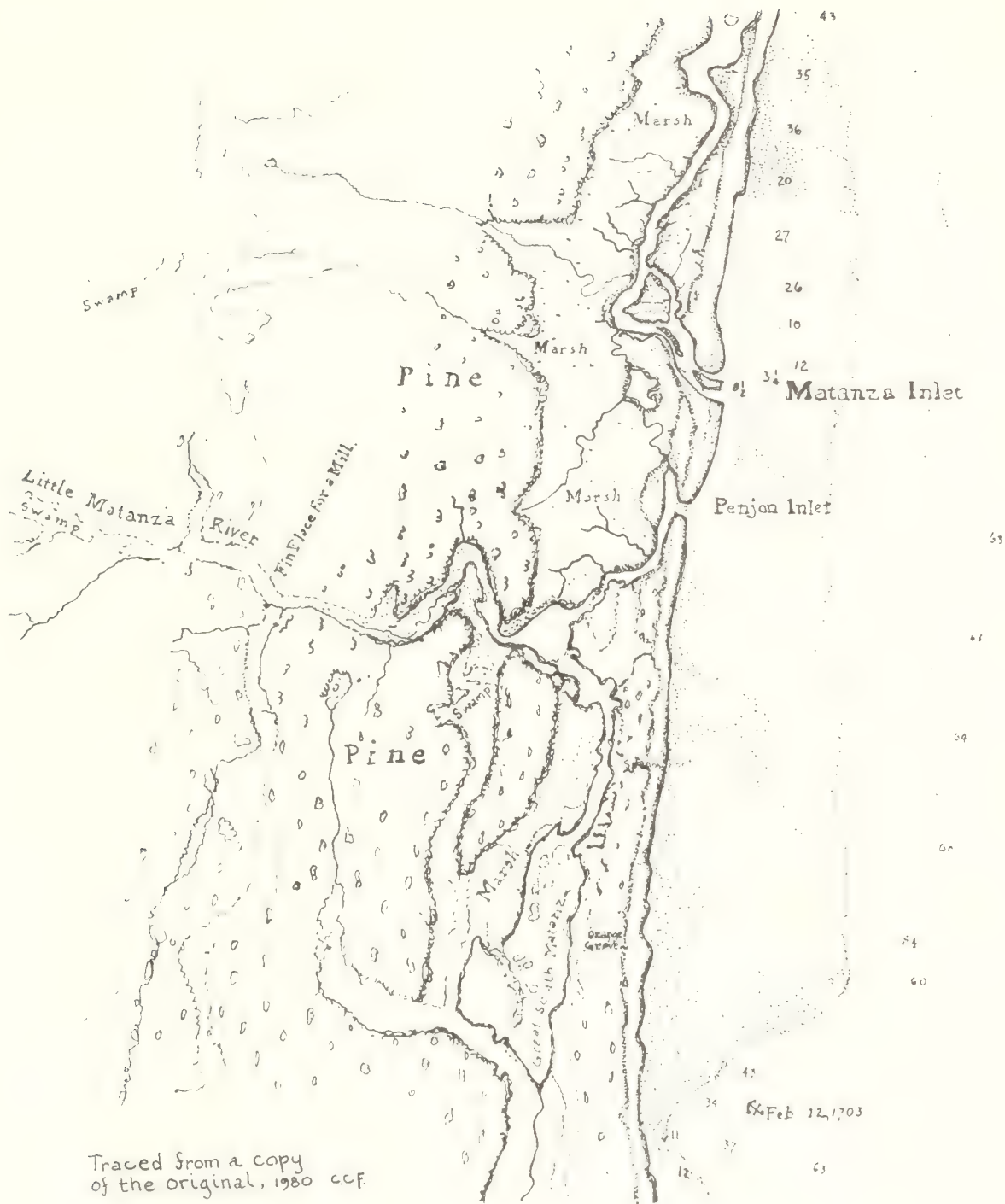


Illustration 4

William Gerard de Brahm, "A Plan of Part of the Coast of Florida, including St. Johns River, from an Actual Survey, 1769." Part of a larger map entitled "Map of the General Surveys of East Florida performed from the year 1766 to 1770." Original in PRO (London) C0700-Fla 53.

CHAPTER I

SUFFICIENCY, 1784-1795

Spain declared war on Great Britain on June 23, 1779. The latter was already fighting against her rebellious American Colonies and France. Within two years, the Spanish captured the British West Florida posts of Manchac, Baton Rouge, Natchez, Mobile, and Pensacola. With the surrender of Pensacola on May 10, 1781, the second Spanish period of government began in West Florida. The capture of St. Augustine in East Florida was planned but not attempted. Her successes gave Spain the leverage she needed at the peace negotiations in Versailles, and in the treaty signed in 1783 she received, among other territories, the two Floridas. But the war left Spanish finances seriously crippled.¹

The second Spanish period in East Florida began on July 12, 1784. On this date, British Governor Patrick Tonyn and Colonel Archibald McArthur delivered St. Augustine, Castillo de San Marcos, and posts in the vicinity to Governor Vicente Manuel de Céspedes, who had arrived from Habana with 500 men in twelve transports and a fund of 40,000 pesos (\$68,604).²

By July 17, five days after the restoration of Spanish rule, Commanding Engineer Mariano De la Rocque³ had made an inspection of St. Augustine and informally proposed what he thought was the most pressing construction and repair work needed. He wrote,

1. Rafael Altamira, Historia de España y de la civilización española, 4 vols. (Barcelona: 1928-29), IV, 63-70; A. W. Ward, G. W. Prothero, and Stanley Leathes (eds.), The Cambridge Modern History, 14 vols. (Cambridge: 1902-12), VI, 375-77, 381, 464.

2. Céspedes to Army Intendant Juan Ignacio de Urriza of Cuba, July 22 and 26, 1784, East Florida Papers (Library of Congress), Bundle 55, Documents 14 and 15 respectively. The EFP are available in St. Augustine in a 175-reel microfilm collection. In 1722-1811, the Spanish monetary unit peso was made up by 8 reales, and each real in turn consisted of 34 maravedises, tomines, or cuartillos, the use of one of the latter terms depending whether one was in Spain, México, or Cuba. The value of the peso at the time equaled \$1.7151 in terms of 1933 US currency, that of the real \$0.2144, and that of the maravedi \$0.0063 (J. Villasana-Haggard, Handbook for Translators of Spanish Historical Documents (Austin: 1941, 106-107).

3. Mariano (Iluis Pau) de la Rocque, the son of Luis de la Rocque and Catalina Rostan, was born in Tarragona (Spain) on Sept. 20,

"I have made the inspection of the Castillo, barracks, and other parts of the city and everything needs repair, but it has been impossible for me to make a cost estimate . . . because for this, I must first draw up the plans and elevations pertaining to said Castillo and barracks, and similarly the hospital, guard rooms, powder magazine, and the new structure for the church, . . . and do whatever is required for full knowledge of the terrain on which we are, so that we may accordingly place ourselves in a posture for defense. . . . However, . . . I feel bound to state to Your Lordship that it is indispensable (in the meantime) to close the large galleries of the (British-build) barracks, repair the corridors, repair the guard rooms, make ready the house that was formerly the hospital, fill in the cracks in

3. (Continued) 1736. The first 41 years of his life-infancy, education, appointment as a subaltern, and promotion to lieutenant - are veiled in darkness. By July 18, 1777, however, he was a lieutenant in, and the adjutant of, the Infantry Regiment del Principe serving in Habana. By March 11, 1781, he had been promoted to captain, and was mentioned as due to embark as an engineer volunteer in an expedition commanded by Gen. Don Victorio Navia. On July 2 following, De la Rocque was granted permission to marry Maria Angela Huet, the daughter of Brigadier Luis Huet and Barbara Bontempo, and the marriage took place probably soon thereafter. At the time Brigadier Huet was engineer-in-chief, quartermaster general for operations, and director of fortifications construction in Cuba. By Aug. 24, De la Rocque had been appointed by the crown as an engineer-in-ordinary with the grade of captain. De la Rocque arrived in St. Augustine on June 30, 1784, as the commanding engineer of East Florida. During his 9-year tour of duty there, he built new earthwork fortifications and public buildings, and remolded or repaired the extant ones. He also drew at least 8 maps and plans as follows: (a) "Plano de la Ciudad de San Agustin de la Florida," Oct. 11, 1784; (b) "Plano del Castillo de San Marcos situado a 200 grados y 40 minutos de Latitude en la Florida del Este," May 12, 1785; (c) (Plano del Convento de San Francisco), May 12, 1785; (d) "Vista de la Puerta de la Capilla del Castillo de San Marcos," May 12, 1785; (e) "Plano Particular de la Ciudad de San Agustin de la Florida. . .," April 24, 1788; (f) (Plano del Convento de San Francisco), Oct. 31, 1788; (g) "Plano General de la Plaza de San Agustin de la Florida y sus inmediaciones. . .," Dec. 24, 1791; and (h) "Plano numero 1 de la Barra y Rio de San Juan. . .," Dec. 24, 1791. On June 27, 1793, De la Rocque turned the engineer's office over to his successor, Capt. and engineer-in-ordinary Pedro Diaz Berrio, and asked for passage to Habana. He died there as an engineer-in-second with the grade of Lieutenant Colonel (John D. Ware, "Mariano de la Rocque, Military Engineer: Two Files of Documents," *El Escribano*, Jan 1971, 5-22; (Luis R. Arana), "Mariano de la Rocque and His Family," *El Escribano*, July 1971, 97-101).

the Castillo terreplein, to prevent loss of provisions and stores caused by the water which filters through, repair the nearly ruined bridge, and make ready the magazine built by the English outside the city gate to receive part of the gunpowder. . ."4

At the time, De la Rocque did not inspect the outlying posts (for example, Fort Matanzas). More pressing duties had prevented him from doing so, but he would as soon as he could. However, he believed that those posts were as dilapidated as the structures in St. Augustine, where the English had let the houses, as well as everything else in the city, fall into disrepair. Correctly or incorrectly, the English had believed that East Florida might fall or be given to the Americans, and consequently declined to spend money to keep up everything in good condition.⁵

By 1785, nothing had been done to improve the condition of governmental buildings in St. Augustine, and the funds brought on the return of Spanish rule had already been spent. However, as there was optimism that money for repairs would soon become available, Engineer De la Rocque reminded the governor that the lime that would be needed had to be ordered in advance, and urged that a contract be let. He wanted the oyster shells thoroughly calcined so that the lime would be free of raw particles, sand, and soil. The lime should then be slaked by exposure to the sun and the dew for at least nine months, so that the water getting into it would rot it. Lime treated this way was of the best an excellent mix, which was not the case when the lime was used immediately after it had been made.⁶

4. De la Rocque to Céspedes, July 17, 1784, EFP, 170/300.

5. Id. to Gov. Luis de Unzaga of Cuba, July 30, 1784, in Joseph B. Lockey, *East Florida 1783-1785: A File of Documents Assembled, and Many of Them Translated*. Edited by John W. Caughey. (Berkeley: 1949), 244-245; Céspedes to Urriza, Sept. 16, 1784, EFP, 55/17.

6. De la Rocque to Céspedes, May 10, 1785, EFP 170/251; De la Rocque, "Condiciones bajo de las cuales se procedera al Asiento de la Cal. . .," May 10, 1785, EFP, 170/250.

Eventually the contract for lime was let, and the contractor had lime kilns at Barra Chica (Little Inlet), also known as Barreta de Juan Ribao (Jean Ribault's Little Inlet), Barreta de Matanzas (Little Matanzas Inlet), and Barreta or Barreton del Penon (El Penon's Little Inlet). This location, however, did not always lend itself in insuring prompt delivery of lime when needed. Whenever periods of extremely low tides prevailed, the raft laden with lime could not get or had difficulty getting to the deeper waters of the Matanzas River for the trip to St. Augustine.⁷

Fort Matanzas, one and a half miles north of Barra Chica, was inspected by Engineer De la Rocque at a time still unknown. Nevertheless, he found that outlying post in satisfactory condition, according to his report on the state of the fortifications and other military buildings in St. Augustine, dated July 31, 1789.⁸

According to De la Rocque, Matanzas Inlet was 16 miles distant from St. Augustine by sea, 18 miles by the inland waterway, and 20 miles by land. It was a half mile wide from the southern tip of Anastasia Island to the northern tip of El Penon (Summer Haven). The inlet had a depth of seven to seven and a half feet at high tide, and of five to five and a half feet at low tide. The winds favorable for entering the inlet were those from the northeast, east, southeast, and south. The entry was difficult, and the engineer considered this factor provided some protection from an attack through the inlet.⁹

Fort Matanzas lay on a small island a short cannon shot inside Matanzas Inlet. Beyond the fort, there was a half mile of marsh grass and mangrove. Fort Matanzas was built of masonry and its sides were 20 varas (55 feet) long. The parapet (merlons) were made of wood filled with earth, and there were three embrasures facing the inlet and three each at the sides. Thus, the fort was capable of mounting nine cannons of "good" caliber.¹⁰ Since the Spanish had done nothing to Fort Matanzas since their return five years

7. Engr. Pedro Díaz Berrío to Gov. Enrique White, Dec. 23, 1796, EFP, 171/234.

8. "Estado general que manifiesta en el que se hallan las fortificaciones y edificios militares de esta plaza. . .," July 31, 1789, EFP, 170/13. A verbatim copy of this report, but dated Dec. 1, 1789, is found also in EFP, 176/1.

9. Ibid.

10. Ibid.

earlier, it is probable that the wood and earth merlons were a British legacy.

According to De la Rocque, nothing needed to be done to Fort Matanzas, but keep it in its extant condition. A small vessel should be provided for the use of the detachment stationed there. In case of war, the fort would be reinforced with a gunboat and two other boats manned by the numbers required for effective defense. The engineer estimated the cost of this additional support at 1,000 pesos (\$1715) annually, but it would enable Fort Matanzas to prevent definitely the entry of an enemy into the waterway leading to St. Augustine Harbor and the San Sebastián River.¹¹

Already in 1789 a minor repair had been performed on Fort Matanzas. In 1786, for instance, the entrance ladder was repaired as much as possible at a cost of 50 reales (\$10.72).¹² In 1789 itself, that ladder finally became unserviceable and a new one of pine wood was provided. In addition, the pine wood drain pipe, which carried the rainwater from the roof to the cistern, was replaced with a new one and several minor unspecified repairs were made.¹³ By 1791, the daily lowering and raising of,¹⁴ and the up and down traffic on, the entrance ladder had apparently damaged it, and it had to be patched up as much as possible.¹⁵

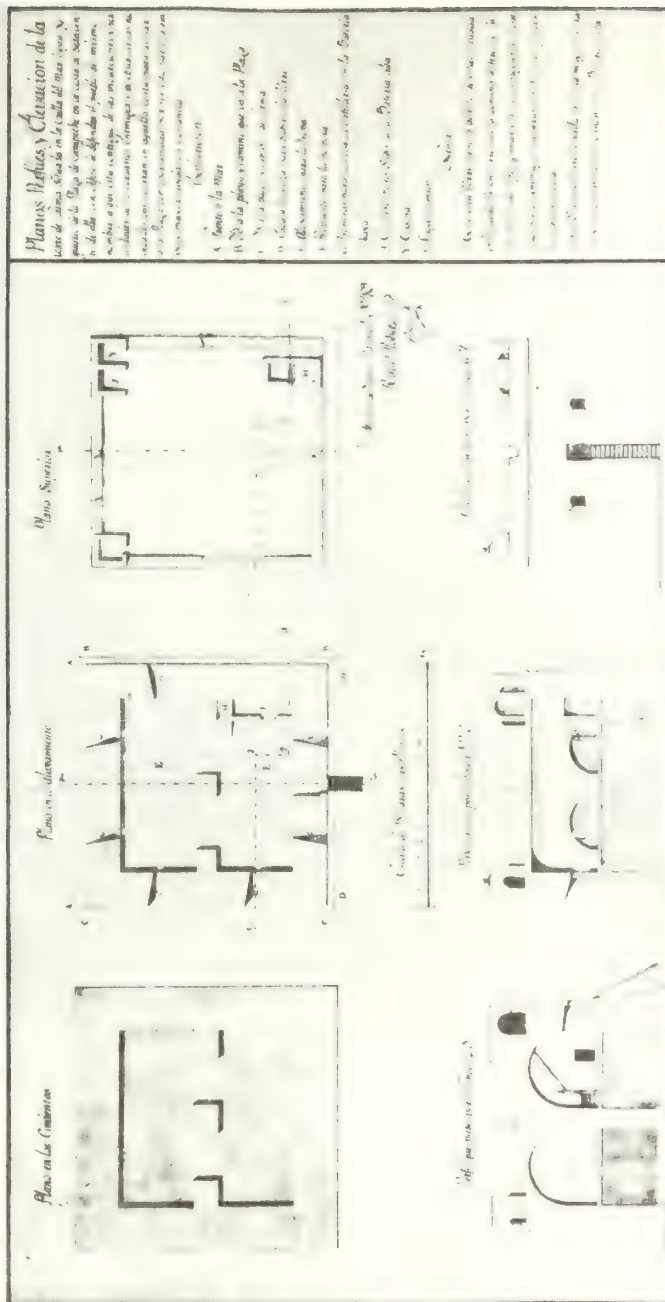
11. Ibid.

12. De la Rocque, "Relación de los reparos ejecutados en las obras . . .," Dec. 31, 1786, EFP, 170/245, and "Relación de los gastos causados en los reparos de las Reales obras. . ." March 7, 1787, EFP, 170/90.

13. ---, "Relación de los reparos ejecutados en las obras del Rey . . .," Dec. 31, 1789, EFP, 170/32.

14. "Instrucciones que debe observar el oficial que se halle de Comandante en el Castillo de Matanzas," Dec. 14, 1796 and Jan. 12, 1805, EFP, 131/238 and 141/19 respectively.

15. De la Rocque, "Relación de los reparos ejecutados en las obras del Rey. . .," Dec. 31, 1791, EFP 171/76.



Num. 33. - Planos, Perfiles y Elevación de la torre de Lerma situada en la orilla del Mar, junto al cuartel de la Plaza de Campeche, en la costa de Yucatán de ella, por D. Rafael Llobet. Año 1789. Servicio Histórico Militar.

Illustration 5

Rafeal Llobet, "Plano, per files y elevación de la Torre de Lerma... en Campeche (México)," October 2, 1789. From Servicis Historica Militar, Madrid, No. K-6-5-50. Use of an entrance ladder to get into Fort Matanzas must have been essentially the same as in Torre de Lerma, where the ladder was located on side of the tower opposite the sea.

Before ordering the replacement of the ladder and drain pipe in 1789, Governor Cespedes, mindful of limited treasury funds, had asked how much was fair wages for masons and carpenters. He felt that the 10- and 12-reales daily wages (\$2.14 and \$2.57 respectively) theretofore paid to those artisans, pursuant to Article 13, Title 4, Tome 4, of the Royal Ordinances, were excessive.¹⁶

Engineer De La Rocque asked the masons and carpenters if they would work for 2 reales (43¢) less than their previous wage. The artisans said they would, provided they were paid cash in hand. Working on credit they would be unavailable for any cash work that might come along. Besides, work for credit might not be steady, and the government might take a year to pay if the treasury was short or empty. It was true that pay accrued on government work enabled them to purchase merchandise in the stores, but merchandise on credit was also more expensive.¹⁷

To the arguments of the artisans, De la Rocque added that theretofore they had not received extra compensation for work away from the city. That compensation was customary because of higher subsistence costs. De la Rocque felt he should continue paying the wages stipulated in the ordinances, but he would lower them whenever there was work of some duration and the artisans were paid weekly in cash.¹⁸

Governor Cespedes resolved on the wages that would thenceforth prevail. For work on credit away from St. Augustine, masons and carpenters would receive 12 reales (\$2.57), but only 10 reales (\$2.14) in the city. For work for cash away from the city, the wage would be 10 reales (\$2.14), but only 8 reales (\$1.71) in the city. The governor considered that 8 reales was the wage generally paid in Habana, where payment like in St. Augustine was not current. Once he carried his point, Cespedes had ordered the replacement of the ladder and the drain pipe.¹⁹

The normal repairs needed and performed at Fort Matanzas in 1792 were more extensive than previous ones. The entrance ladder leaned to one side because a leg was broken and it rested on rocks piled one on top of the other, and also four rungs were missing. The broken leg and the missing rungs were replaced. The wooden merlons of the parapet had come apart because the boards had rotted

16. Id. to Cespedes, May 19, 1789, EFP, 170/6.

17. Ibid.

18. Ibid.

19. Cespedes to De la Rocque, May 20, 1789, EFP, 170/7.

and the earth fill run out. The framework of the merlons left in place was removed and the parapet left a barbette (low), because the decision had already been made to build stone merlons when money became available. The material needed was nearby. The two doors of the fort had termites; they were repaired, probably replacing the affected parts only. The four broken treads of the stairway to the second story and the broken hinges of two windows were replaced.²⁰

The term a barbette in the preceding paragraph referred to an artillery firing technique. It meant firing a fortification's cannons in the open, without the protection of a regular parapet. The firing was done over the lower parapet, without merlons and embrasures, that was logically required by the technique. The disadvantage of little protection to either gun or crew was compensated by simpler and more economical construction, easier service of the piece, and wider field of fire.²¹ The narrative will bring out later that wooden merlons were built again at Fort Matanzas, at least in part, within the next seven years. No record has been located of the exact time and extent of the work.

The remark in the paragraph before last to the effect that "the material needed was nearby," in connection with the proposed construction of stone merlons at Fort Matanzas, is an obvious reference to the coquina quarry at El Penon, the elevation lying between Matanzas Inlet on the north and Barra Chica on the south. Six years earlier, in 1786, Engineer De La Rocque had urged the differentiation of the quarries belonging to the King and those extant prior to 1763 for the common use of the public. De la Rocque wanted to designate a quarry where the St. Augustine residents could obtain coquina stone and rubble for the repair of their houses. The engineer and Don Manuel Solana, a 1763 resident of St. Augustine who knew about the local situation that year, crossed over to Anastasia Island, made the differentiation, and duly marked and posted the King's quarries and the commons' quarry. Presumably, the King's quarry at El Penon was one of those duly marked and posted. Gover-

20. Gov. Juan Nepomuceno de Quesada to De la Rocque, Feb. 29, 1792, EFP, 171/81; De la Rocque to Quesada, March 5, 1792, EFP, 171/82; Quesada to De la Rocque, Nov. 2, 1792, EFP, 171/112; De la Rocque, *Relacion de los reparos ejecutados en los edificios del Rey...*, Dec. 31, 1792, EFP, 171/118.

21. Jo   Almirante, *Diccionario militar* (Madrid: 1869), 141-142; Mariano Rubio y Bellve, *Diccionario de ciencias militares*, 3 vols. (Barcelona: 1895-1903, I. 361).

nor Cespedes approved and suggested posting watchmen at the King's quarries, so that residents would not extract coquina from them.²²

The King's quarry at El Penon was protected specifically in 1795. An order issued August 15 prohibited any private person to extract coquina stone from that quarry, and made the commander of Fort Matanzas responsible for enforcing the ban. It was probably the same year that another order was published prohibiting the taking of oyster shells from a mound at Barra Chica. The mound was the first landmark seen by vessels coming to St. Augustine from the south, and diminishing its size was regarded as a potential danger to navigation. The order forbidding the extraction of coquina was repeated in 1797, as a reminder to new settlers who were establishing themselves south of Barra Chica. The repetition enjoined the corporal at Fort Matanzas to visit that inlet daily and make sure the prohibition was being observed.²³

Coming back to repairs on Fort Matanzas, the work performed in 1793 was prompted by the news that Spain had declared war against the French National Assembly. Among the measures adopted to improve the defenses of East Florida, one was to lay a new surface on the terreplain or gun deck of the fort. The two 8-pounder cannons to be mounted there a barbette would need a strong surface for their weight and possible use. In addition, the number of men was increased by five including a gunner. By September 1, the terreplein was ready to receive the guns.²⁴

A housekeeping chore at Fort Matanzas in 1794 reveals a piece of information about a feature of the structure. Commander Antonio Dominguez had both the roof and the cistern cleaned so that the water from future rains, draining into the cistern, would be purer. The water already in the cistern, which had a diameter of three varas (eight feet, three inches), was emptied with a bucket into two

22. De la Rocque to Céspedes, Nov. 25, 1786, EFPm 410/404; Cespedes to De la Rocque, Nov. 27, 1786, EFP, 410/105.

23. Commander Onofre Gutiérrez Rosas of Fort Matanzas to White, July 17, 1799, EFP, 134/186; id. to id., Sept. 18, 1799, EFP 134/274/ White to Cmdr. Manuel Rodríguez, Aug. 3, 1797, EFP 132/205.

24. Council of War, June 7, 1793, EFP, 277/1; Qyesda to Cmdr. Francisco Vallejo, Sept. 1, 1793, EFP, 124/169.

barrels in three and a half hours.²⁵

Incidentally, the cistern at Fort Matanzas was supplemented by another source of water for human consumption. Every day the canoe, with four men on board, travelled on the appropriate tide to the mouth of a creek, and navigated up the creek to a point one mile from the fort. There the men disembarked and travelled on foot another mile, until they reached the plantation of Antonio Mestre, the one closest to the fort. There the men filled water casks and bearing them on their shoulders returned to the canoe for the trip back to the fort. On occasions, the tides compelled this procurement of water to be undertaken at night. In June 1798, Commander Miguel Ceballos of Fort Matanzas regarded this procedure as cumbersome.²⁶

The solution to the problematic procedure came through a remembrance of Gunner Adriano Diaz. Diaz recalled that at one time in the past there was a fresh water well on Anastasia Island, opposite and within sight and shouting distance of the fort. Ceballos located the well which still had some staves in it. He thought that the well could be rehabilitated by the investment of two barrels, the use of two hoes and two shovels, and the work of two or three convicts. The rehabilitation was carried out.²⁷

Before the rehabilitation of the well, an inspection of Fort Matanzas had been made in 1795. The chief construction overseer went there to look at conditions and propose needed repairs. No inspection report has been found.²⁸

No record has been found showing that repairs were performed on Fort Matanzas in 1784, 1785, 1787, 1788, 1790, 1794, and 1795.

25. Quesada to Cmdr. Antonio Domínguez, Aug. 5, 1794, EFP, 127/35; Domínguez to Quesada, Aug. 6, 1794, EFP, 127/36.

26. Cmdr. Miguel Ceballos to White, June 11, 1798, EFP, 133/93.

27. Id. to id., June 14, 1798, EFP, 133/97.

28. Cmdr. Francisco de Herrera to Gov. Bartolomé Morales, Nov. 2, 1795, EFP, 130/111.

CHAPTER II

DECLINE, 1796-1810

Foundation erosion at Fort Matanzas was one of two conditions which would eventually cripple that structure, and it was first mentioned in 1796. On July 29, Commander Esteban Lacal reported that the foundations were badly deteriorated because Matanzas River was beating the walls continuously and displacing the stones. Lacal's statement was not limited to mention of the east and south-east foundations only. Master mason Clemente de Salas and a work party arrived at Fort Matanzas on August 8 for the purpose of repairing the damage.²⁹ No report of the work performed has been found.

There was no indication in May 1799 that the other crippling condition prevailing at Fort Matanzas, that of rainwater leakage, would soon be revealed. That month, the entrance ladder was replaced by a new one delivered from St. Augustine.³⁰ But in June a hurricane struck St. Augustine. On the 14th, Commander Onofre Gutiérrez Rosas reported that the hurricane had caused the rain to leak profusely through the arch of the tower, mainly next to the chimney. In that part of the chimney located in the lower story of the structure, a few ladrillos (bricks) had fallen out. In the upper story, the leaks had affected the gunpowder magazine also, and it had been hard work keeping the powder safe from damage, because not a single place had remained dry. The water-soaked wall was still dripping. On the terreplein, the wooden parapet erected by him on the east wall had been carried away by the wind. Gutiérrez believed that repairing the roof was essential as soon as dry weather set in.³¹

Accordingly, the chief master mason visited Fort Matanzas on November 13, and determined the nature and extent of repairs needed. By December 5, when the work was reported finished, the tabby surface of the roof had been replaced, a new stairway with hand rail to the second story had been installed, the walls of the lower story had been partly replastered inside, the chimney had been repaired, and missing stones of the east and south wall foundations

29. Cmdr. Esteban Lacal to White, July 19, 1796, EFP, 131/117; White to Lacal, Aug. 8, 1796, EFP, 131/126.

30. Gutiérrez to White, May 6, 1799, EFP, 134/81.

31. Id. to id., June 14, 1799, EFP, 134/147; id. to id., Nov. 12, 1799, EFP, 134/337.

had been replaced.³² Evidently, the merlon blown away from the east parapet was not reconstructed, but there was work performed on the parapet after 1799, as shall be seen later. No record of the exact time and extent of it has been found.

That same year of 1799, Fort Matanzas twice played the role of enforcer of the orders for the conservation of the coquina stone and oyster shells at Barra Chica. On the night of July 16, a raft detected coming from that inlet, laden with coquina stone, was ordered to tie at the fort's larding. The lime and charcoal contractor had sent his sone to fetch some stone for repairing his house. On the 17th, the corporal at the fort supervised the return of the raft to Barra Chica and the dumping of the stone in the same place from where it had been extracted.³³

Then on September 18 the patrol from Fort Matanzas surprised a raft loading oyster shells from the mound at Barra Chica, and stopped that activity. The raft belonged to Dupont, a resident of the Matanzas Inlet environs, and its Black crewmen were told to inform their master that neither he nor any other private person could, under any circumstance, pick up oyster shells at the Barra Chica mound. Only the lime contractor, Fernando Falany, was allowed to do it in the quantities needed to supply specific order for lime.³⁴

Between the repairs of 1796 and those of 1799, minor tasks were performed for Fort Matanzas. In April 1797, the pump at the cistern had become unserviceable because apparently water spewed out through every joint but not through the nozzle, and the entrance ladder was falling apart because it had been sufficiently sturdy initially. Since the pump could not be caulked, it was replaced by a new one. Similarly, a new ladder was built in St. Augustine and transported to the fort,³⁵ which ladder in turn was replaced, as has already been seen, by another one in May 1799.

32. White to Gutiérrez, Nov. 13, 1799, EFP, 134/338; Gutiérrez to White, Dec. 5, 1799, EFP, 134/348; White to Minister of Grace and Justice, Jan. 9, 1800, EFP, 38/67.

33. Gutiérrez to White, July 17, 1799, EFP, 134/186; White to Gutiérrez, July 17, 1799, EFP, 134/185.

34. Gutiérrez to White, Sept. 18, 1799, EFP, 134/274; White to Gutiérrez, Sept. 19, 1799, EFP, 134/275.

35. Cmdr. José de Córdoba to White, March 30, 1797, EFP, 132/60; id to id., April 1, 1797, EFP, 132/62; White to Cordoba, April 3, 1797, EFP, 132/67; Cordoba to White, April 10, 1797, EFP, 132/72.

It becomes obvious that the entrance ladder at Fort Matanzas was one of the items most likely to get broken. The last one furnished in May 1799 was replaced by a new ladder delivered from St. Augustine in February 1800.³⁶

Rainwater leakage at Fort Matanzas worsened. In October 1801, there were extremely heavy rains and Commander Gutiérrez reported that the fort's "roof and walls were veritable streams and consequently both stories had been lagoons." The water got into the gunpowder magazine, wetting the powder and irretrievably spoiling some of it. The cover of the hatch giving access to the roof had become unserviceable, and a new one was built.³⁷ However, the extreme dampness continued to cause damage, for in 1802 both the frame and the door of the powder magazine were built new.³⁸ A new cover for the cistern was made in 1803.³⁹

By 1806 the terreplein surface laid at Fort Matanzas in 1796 had become unserviceable. As an expediency, the surface had been covered previously with planks, but the planking also had outlived its usefulness. At this juncture, Private Bartolome Cartada, stationed at the fort, proposed on July 6 his putting on a new surface. He would furnish all the materials for the tabby mix, except the lime, which the Government could supply from Barra Chica. He would transport the materials in a canoe of his own property. After completion of the task, Cartada would accept from the governor a re-

36. White to Gutiérrez, Feb. 3, 1800, EFP, 135/12; id. to Minister of Grace and Justice, Jan 10, 1801, EFP, 38/68.

37. Gutiérrez to White, Oct. 28, 1801, EFP, 136/261; id. to id., Nov. 5, 1801, EFP, 136/268; White to Minister of Grace and Justice, Jan. 10, 1802, EFP, 38/69.

38. Cmdr. Manuel Zamora to White, Nov. 1, 1802, EFP, 138/197; White to Minister of Grace and Justice, Jan. 10, 1803, EFP, 38/76.

39. Id. to Id., Jan. 12, 1804, EFP, 38/78.

ward commensurate with his effort. Engineer Manuel de Hita⁴⁰ talked to Cartada to ascertain his qualifications and means, and though praising his good will, doubted that Cartada might be able to do the work properly.⁴¹

Cartada's proposal, however, prompted the reconstruction of the terreplein at Fort Matanzas. Stockpiling of lime and other materials on the site began in mid-July. About three weeks later, eight convicts started the task and finished it on November 24. They had removed the planking and laid a tabby slab 16 Spanish inches thick (US 14.624 inches).⁴²

Military measures under consideration in 1808, if carried out, altered the environment at Matanzas Inlet. Early in February, a council of war resolved that as many obstacles as possible be placed in the Matanzas River, to delay an enemy's approach to St. Augustine in case of an attack, which would likely come via the inlet.⁴³ Later, the commanding engineer and the artillery commander recommended the leveling of some sand dunes on Anastasia Island. The dunes, within a musket shot opposite Fort Matanzas, formed something like an entrenched line. If reached by an enemy, the dunes might have cancelled the fort's defense capability.⁴⁴

The limited cave-in that happened at Fort Matanzas in 1809 presaged the fate of the structure. On July 28, Commander Gil José Pacot reported that part of the floor of the second story

40. Capt. and engineer-in-ordinary Manuel de Hita became the commanding engineer on Nov. 1, 1803. He succeeded Engineer Volunteer Nicolás Barcelo, who had taken over from Lieut. Col. and engineer-in-second Pedro Díaz Berrío on May 25, 1802. Early in Aug. 1811 Hita left St. Augustine for Santo Domingo, whereto he had been transferred (Barcelo to White, May 26, 1802, EFP, 171/326; Hita to White, Nov. 1, 1803, EFP, 171/344; *id.* to Gov. Juan José de Estrada, July 30, 1811, EFP, 172/48).

41. Cmdr. Martín Oderiz to White, July 6, 1806, EFP, 142/117.

42. White to Oderiz, July 16, 1806, EFP, 142/120; *id.* to *id.*, Aug. 9, 1806, EFP, 142/129; Cmdr. Justo Lopez to White, Nov. 24, 1806, EFP, 142/203; White to Minister of Grace and Justice, Jan. 5, 1807, EFP, 38/85.

43. Council of War, Feb. 4, 1808, EFP, 277/1.

44. Hita to White, Feb. 23, 1808, EFP, 172/20.

near the chimney had given way, damaging the chimney flue and leaving a hole in the floor. Whenever the fireplace was used, smoke filled the officer's quarters, and the hazard was present that sparks from the fireplace might shoot up the hole and start a fire, which might endanger the powder magazine.⁴⁵

To perform the proper repairs, the Fort Matanzas commander would purchase 40 bushels of lime from the inhabitants of the inlet area at one real and a cuartillo (22¢) per bushel. One week later, lime made by a black man at the rate indicated, rather than purchased from the inhabitants, had been obtained. The repairs subsequently performed on Fort Matanzas required six (square) varas (seven yards, twelve inches) of stone for the chimney flue. Also, a partition with one door was built (separate officer's quarters in second story?). In addition, 162 varas (148 yards, 18 inches) of interior walls in both stories were plastered and whitewashed to get rid of a multitude of roaches.⁴⁶

In contrast to the extensive work of 1809, the single repair performed on Fort Matanzas in 1810 looked minor. It consisted of replacing seven feet of the wooden drain pipe carrying the rain-water from the roof to the cistern.⁴⁷

No record has been found showing that repairs were performed on Fort Matanzas in 1798, 1804, 1805, 1807, and 1808. And as it will be seen, nothing else would be done on the structure during the remainder of the second Spanish period.

45. Pacot to White, July 28, 1809, EFP, 145/255.

46. White to Pacot, Aug. 2, 1809, EFP, 145/244; Pacot to White, Aug. 4 and 8, 1809, EFP, 145/265 and 145/268 respectively; White to Minister of Grace and Justice, Feb. 26, 1810, EFP, 38/87.

47. Id. to id., Jan. 5, 1811, EFP, 38/88.

CHAPTER III

COLLAPSE, 1811-1821

In early August 1811, the resident engineer's position in East Florida became vacant. Engineer De Hita, his wife, and their nursing child departed for Santo Domingo.⁴⁸ Still, there was a procedure for performing repairs on public buildings in the absence of an engineer.⁴⁹ Despite this, no records have been found in the five-year-and-five-month period following De Hita's departure which tell about any construction and repairs in East Florida (includes Fort Matanzas). It is apparent during this period that the absence of an engineer, lack of repairs due to the paucity of construction funds, and the unchecked twin effects of foundation erosion and rainwater leakage contributed to the ruinous condition which overcame Fort Matanzas. The erosion and leakage had first appeared in 1796 and 1799 respectively.

The degree of decay reached by Fort Matanzas was revealed in 1818. The fort commander complained that the structure was in dire need of repairs, at a time when the resident engineer's position had been filled, after a five-year-and-five-month lapse, by Captain Francisco Cortázar.⁵⁰ Cortázar inspected Fort Matanzas. He found that river erosion had exposed and destroyed part of the footing and undermined the scarp wall. Cortazar was surprised that the affected parts had not collapsed, and attributed this to the monolithic character of the masonry walling from the ground up to the terreplein. The undermining, however, had cracked the

48. Hita to Estrada, July 30, 1811, EFP, 172/48.

49. (Chief Master Carpenter?) Martín Hernández to Estrada, Aug. 17, 1811, EFP, 172/49.

50. Capt. and engineer-in-ordinary Francisco Cortázar became the commanding engineer on Dec. 27, 1816. His tour of duty ended on March 28, 1819, when he was succeeded by Lieut. Nicolas Fano of the Regiment of Habana, whose qualifications to serve as an engineer volunteer had been approved by the engineer director in Habana (Gov. Jose Coppinger to Cortázar, Dec. 27, 1816, EFP, 172/50; *id.* to *id.*, March 26, 1819, EFP, 172/179; Fano to Coppinger, March 29, 1819, EFP, 172/181).

parapet of the roof and the arch over the officer's quarters in the second story.⁵¹ Consequently in rainy weather there was hardly a dry place to spread a blanket and lie down.⁵²

Cortázar at first envisioned repairing the damage by altering the architectural design of Fort Matanzas. Since the first story was still unaffected, he considered tearing the second story down to its floor level, and adding the same space at the rear of the structure, in order to locate the officer's quarters and powder magazine there. Naturally, this course would also extend the base of the fort rearward.⁵³

But his actual proposal for renovation was more modest. He recommended the replacement of broken foundation piling and the missing stones, laying floor surfaces, plastering the interior walls, and repairing a ladder, three windows, and two doors. Cortázar estimated that the foundation work required 414 pilings 6 feet (5 feet, 6 inches) long and 6 (5½) inches square at 2 reales (43¢) each, and 14 cubic varas (about 13 yards) of cut stone at 7 pesos (\$12) each. The floor surfaces would take 137 square varas (125 yards, 21 inches) of tabby at a peso (\$1.71) each. The interior plastering called for 8 bushels of lime at 3 reales (64¢) each. The lumber for the ladder, windows, and doors would cost 30 pesos (\$51.45). Labor on the 80-day job would amount to 120 pesos (\$205.81). The whole cost estimate amounted to 491½ pesos (\$842.11).⁵⁴

The proposal could not be implemented. The very limited funds in the Royal Treasury had been marked for other needs more urgent than the repair of fortifications. Cortázar's report and estimate were forwarded to the captain general of Cuba with a request for money to do the job.⁵⁵

51. Coppinger to Cortázar, Feb. 27, 1818, EFP, 172/98; Cortázar to Coppinger, Feb. 28, 1818, EFP, 172/99; "El pie del cimientto norte del frente principal y del lado se halla removido y descubierto, contra quien (sic) el mar choca constantemente" (id. to id., March 6, 1818, EFP, 172/101).

52. Cmdr. Juan Sanz to Coppinger, June 17, 1818, EFP, 151/43.

53. Cortázar to Coppinger, March 6, 1818, EFP, 172/101.

54. _____, "Cálculo que manifiesta lo que se hace preciso para la reparacion de la Torre de Matanzas," March 6, 1818, EFP, 172/102.

55. Urriza to Céspedes, Aug. 20, 1785, in Lockey, op. cit., 681; Céspedes to Urriza, Sept. 30, 1785, EFP, 55/23; Cortázar to Coppinger, March 6, 1818, EFP, 172/101.

That same year of 1818 the water supply system of Fort Matanzas ceased working altogether. In November, Commander Justo Lopez reported that the cracked roof permitted very little water to reach the wooden drain pipe that led to the cistern, and lately the pipe had become so defective that it delivered its little stream all over the terreplein instead of to the cistern. The fort was left with only a two-day reserve in the cistern. Lopez added that the stairway leading to the second story and the ladder leading through the hatch to the roof were in bad condition, and the men using them were risking an accident.⁵⁶

Again even these minor repairs were omitted. The money in the treasury was insufficient to tend to everything. Governor José Coppinger remarked resignedly, "It is essential that we reconcile ourselves to the circumstances until we receive aid from Habana."⁵⁷

In 1819, as if presaging the Spanish withdrawal from Florida, the Fort Matanzas flag pole fell to the ground. Having reported the event, Commander Casto Gonzalez Ortiz added adjectedly, "It would be useless to talk to Your Lordship about the condition of it by previous commanders." The governor ordered the flag pole raised again. He also informed Gonzalez that higher authority was aware of the condition of Fort Matanzas, and had resolved to have all defects corrected. This however, would have to wait for the receipt of repair funds.⁵⁸

No funds marked for repairs to Fort Matanzas had been received, nor had any kind of work been performed, by the time Engineer Ramon de la Cruz⁵⁹ inspected the fortification in August 1820. De la Cruz found the structure completely deteriorated, particularly the roof and all of the second story. The men there were practically outdoors, for they did not have any shelter from the rain. Furthermore, the structure was in imminent danger of collapsing, and to present a tragedy, De la Cruz suggested that the men be removed

56. López to Coppinger, Nov. 27, 1818, EFP, 151/86.

57. Coppinger to López, Dec. 1, 1818, EFP, 151/89.

58. González to Coppinger, March 9, 1819, EFP, 151/14;
Coppinger to González, March 10, 1819, EFP, 151/18.

59. Lieut. Ramón de la Cruz of the Infantry Regiment of Málaga, the 31st of the line, stationed in Habana, left there on or about April 3, 1820 to serve as an engineer volunteer in St. Augustine. He arrived there on or about April 15, but found Engineer Volunteer Nicolas de Fano reluctant to transfer the office to De la Cruz because he had not received personal, official notification of his relief. De la Cruz had been sent because the colonel of the Habana Regiment had asked

from the fort and sheltered in tents. The tents would be located at a proper distance from the structure and be equipped with board floors, due to the marshy nature of the ground. This arrangement would last as long as the structure was not repaired.⁶⁰

Fort Matanzas may not have been evacuated immediately, but it certainly was two months later after another mishap. On September 28, 1820, lightning struck the roof, causing such damage that the structure became uninhabitable and incapable of performing its mission. Governor Coppinger ordered that partial, temporary repairs be made promptly, taking into consideration the nearly depleted state of the treasury. Higher authority would have to provide for total, permanent repair.⁶¹

That Fort Matanzas was not even patched up is obvious. On October 20, three weeks after the lightning strike, Engineer De la Cruz submitted a report on the condition of fortifications and other public building, in which he described the structure and its situation as follows:

"The castillo called Matanzas, for the defense of the inlet, is located at a distance of 21 miles down the coast to the south. The inlet communicates with the bay over a navigable river with several other branches of little importance. This fuerte is a regular square of proper height, all of stone, but its foundations are destroyed and all that part containing the second story and the roof is completely ruined, due to inclement weather and lack of repairs which should have, accord-

59. Continued. that Fano rejoin the regiment. Fano finally gave in on April 20 (Coppinger to Fano, Feb. 26, 1820, EFP, 172/227; "Pasaporte," April 3, 1820, EFP, 172/234; De la Cruz to Coppinger, April 15, 1820, EFP, 172/238; Fano to Coppinger, April 15, 1820, EFP, 172/239; Coppinger to Fano, April 15, 1820, EFP, 172/240; Fano to Coppinger, April 20, 1820, EFP, 172/247; De la Cruz, "Inventarios formados por. . .," June 4, 1821, EFP, 260/1).

60. De la Cruz to Coppinger, Aug. 2, 1820, EFP, 172/266.

61. Coppinger to De la Cruz, Sept. 28, 1820, EFP, 172/268; De la Cruz, (Memorial del estado de las fortificaciones), Oct. 20, 1820, EFP, 172/275.

ing to several requests, been attended to several years ago. At present, it is incapable of being a fortified post or of being able to keep a garrison in it, (especially) after the damage caused by the thunderbolt which struck its roof and subsequent storms. The site which it occupied was (sic) the most advantageous and proper to keep under cover the entrance into the bay through this point, so important to the defense as well as to the conservation of the bay. This site, indispensable as it is for defense, cannot be abandoned without facing responsibility for the consequences (of such action)." 62

Although Fort Matanzas was uninhabitable, the site was not abandoned. Soldiers continued to reside there in an unknown type of shelter. Perhaps tents and board floors were furnished to them as suggested previously by Engineer De la Cruz. Be it as it may, the fact is that Gunner Francisco de Herrera (Corps of National Artillery), Sergeant 2nd Class Manuel Ruiz (6th company, 2nd battalion, Infantry Regiment of Cuba), and Sergeant 2nd Class Lorenzo Brito (Colored Militia Company of Habana) were among those present at the muster held at Matanzas on July 5, 1821, just five days before the formal transfer of East Florida to the United States.⁶³

But already Engineer De la Cruz and Adjutant Pablo Rosete had on June 4 turned the Spanish fortifications and other public buildings in St. Augustine over to Lieutenant W. J. Baird of the 3rd U.S. Artillery. Among the structures listed on the Inventarios handed to Baird, the Torre de Matanzas was item No. 15. As described by De la Cruz, the tower was

62. Ibid.

63. "Lista de revista de comisario. . .," July 5, 1821, EFP, 95/2; "Relacion de los soldados. . .," July 5, 1821, EFP, 95/50; "Pie de lista de revista de comisario. . .," July 5, 1821, EFP, 95/82.

"located in front of the inlet of this name, near the southern tip of Santa Anastasia Island. The tower is fortified, having a terreplein, parapet with merlons, gunpowder magazine, kitchen, troop quarters, (and) officer's quarters. At present, all that makes up its second story is unserviceable and at the eastern angle of the first (story), the foundation is eroded and the scrap cracked. Plan No. 5 gives an idea of its design and measurements, and the elevation next to it shows its height. The sand banks at the entrance to the inlet, shown on said plan, change position according to more or less full tides, but an idea can be obtained of their location and the space they occupy."⁶⁴

In the terreplein's parapet with merlons mentioned above, there was only one merlon facing south and it was made of wood. It disappeared eventually and the original masonry parapet became visible. The latter was two courses of stone lower than the east and west sides. It may have been assumed later, due to lack of knowledge about the a barbette design, that the original south parapet was low because it had lost two courses of stone.⁶⁵

Plan No. 5 of Fort Matanzas, mentioned by De la Cruz, supplements graphically, up to a point, the preceding written description of the structure. On the floor plan, the terreplein shows two embrasures only in the parapet facing southward to the inlet, and none on the east and west sides. The dotted lines parallel to the east parapet, suggesting the existence of two rooms or enclosures in the terreplein fill, cannot be explained. Perhaps they merely indicate the extent of the scrap walling. The roof of the tower shows the hatch clearly, and dotted lines indicate a room each at both the east and west ends of the second story.⁶⁶

64. "Inventarios formados. . .," June 4, 1821, EFP, 260/1.

65. Castillo de San Marcos Historical Photo File, No. M-42 (Harry Fenn's drawing of ruined Fort Matanzas, Picturesque America (1874); Nos. M-54 and M-55 both dated July 23, 1912.

66. "Plano N: 5:, Torre de Matanzas con su barra," (1821).

The floor plan is complemented by an elevation of Fort Matanzas. The elevation depicts the sentry box, a short merlon connected to the southwest angle of the terreplein, a middle merlon, another short merlon connected to the southeast angle, and two embrasures formed by the middle merlon. The south wall of the tower shows the door of the first story, and a stairway and short, partly-roofed balcony, both hand-railed and balustered, leading to the door of the second story. The hatch cover and the chimney can be seen rising from behind the roof parapet.⁶⁷

Details in De la Cruz's drawing of Fort Matanzas are not completely accurate or are missing. On the floor plan, no dotted lines suggest the cistern's opening on the terreplein surface. The roof does not show the chimney nor do dotted lines suggest the location of the gunpowder magazine. On the elevation, there are no dotted lines on the south scrap to suggest the presence of the cistern in the terreplein fill. The south wall of the tower shows no windows in the first floor, but it does show two windows in the second story, rather than the existing smaller vents or ports for observation, ventilation, or musket firing. The door of the first floor is shown erroneously directly underneath the door of the second story.⁶⁸

In 1821 Fort Matanzas faded into the oblivion of history. Vegetation overran the terreplein and the roof of the tower, each of these features shear-cracked vertically in two places. The south-east angle of the terreplein listed forward because its foundation was undermined. The sentry box, except for its base, the central merlon of the south parapet, the wooden drain pipe and well curb of the cistern, the stairways, doors and windows, the roof hatch cover, and the chimney, all disappeared.⁶⁹

Fort Matanzas had performed its mission as an outpost of the Spanish St. Augustine defenses, as envisioned at the time of its construction 79 years earlier. It had done so too for British St. Augustine. But it would not have served the Americans, even if the structure had been in serviceable condition, for the United States did not have to watch out for an unfriendly neighbor, as had been the case with Spain and Britain.

But Fort Matanzas would not be forgotten forever. Unforseen in 1821, the future held a bright prospect. The ruins would be retrieved and saved to tell their story.

67. Ibid.

68. Ibid.

69. Photos No. M-42, M-54, M-55.

Subsection D:

THE WAR DEPARTMENT YEARS, 1821-1933

by

Edwin C. Bearss

National Park Service
United States Department of the Interior
August 1978

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS	87
CHAPTER I: THE UNITED STATES ENGINEERS AND THE FORT-- THE FIRST SIXTY YEARS.	89
CHAPTER II: THE FORT BECOMES AN INTERESTING RELIC.	95
CHAPTER III: THE 1916-17 REPAIR OF THE FORT.	105
CHAPTER IV: FORT MATANZAS--A WAR DEPARTMENT STEP-CHILD . . .	119
BIBLIOGRAPHY.	491

LIST OF ILLUSTRATIONS

Illustration

6.	"Fort of Matanzas Inlet" by Lt. H. W. Benham	91
7.	U.S. Coast and Geodetic Survey, Matanzas Inlet Quadrangle, August 1882	94
D-10.	View of Tower Deck, 1923 . . . . .	.278
D-11.	Detail of South Scarp, April 1923. . . . .	.279
D-12.	Detail of East Scarp, April 1923 . . . . .	.279
D-13.	Dismantled East Scarp During 1924 Reconstruction . . . .	.280
D-14.	Dismantled South Scarp During 1924 Reconstruction. . . .	.281
D-15.	Fort During 1924 Reconstruction Work . . . . .	.282
D-16. and D-17.	Fort After 1924 Reconstruction . . . . .	.283
D-21.	View of 1929 Reconstructed Sentry Box, 1930. . . . .	.287
D-22.	View of 1929 Reconstructed Sentry Box from Terreplein. . . . .	.288

I. THE UNITED STATES ENGINEERS AND THE FORT--THE FIRST SIXTY YEARS

A. "Torre de Matanzas" in 1821

On July 10, 1821, the United States formally accepted from Spain responsibility for Fort Matanzas. As the coquina tower was not garrisoned, the transfer was consummated, at St. Augustine, when United States Commissioner Robert Butler accepted from Col. José Coppinger, acting as agent for the Captain-General of Cuba, "formal delivery" of the Province of East Florida. This was done in accordance with the Adams-Onís Treaty of February 22, 1819.¹

On August 8 Colonel Butler, having secured a number of plans and charts from the Spanish authorities, including one of the "Torre de Matanzas con su Barra" forwarded them to Territorial Governor Andrew Jackson.² A week later, on the 14th, Capt. John R. Bell mailed to the Secretary of War invoices of "all the Fortresses and public Edifices known as belonging to the Government," which have been delivered by Colonel Coppinger to Commissioner Butler and recipted for by the post quartermaster.³

A copy of this plan is on file at Castillo de San Marcos National Monument. The original is on file at National Archives, State Department, Florida Territorial Papers, VIII.

According to a survey by Ramon de la Cruz, Matanzas tower was situated within cannon range of the inlet by that name, near the southern extremity of Anastasea Island. The tower was

1. Butler to Adams, July 11, 1821 found in The Territorial Papers of the United States--The Territory of Florida, 1821-1824, edited by Clarence E. Carter (Washington, 1956), Vol. XXII, pp. 111-113.

2. Butler to Jackson, Aug. 8, 1821, found in ibid., pp. 165-66; David W. Parker, Calendar of Papers in Washington Archives Relating to the Territories of the United States (to 1873) (Washington, 1911), pp. 75-6.

3. Bell to Calhoun, Aug. 14, 1821, found in Territorial Papers, Florida Territory, Vol. XXII, pp. 169-70.

A fortified terreplein, with parapets, embrasures, powder magazine, kitchens, soldiers' room, and officers' quarters. At present every thing in the Second Story is useless, and in the first from the East Angle.

The plan No. 5 (Torre de Matanzas) given an idea of its construction dimensions and the profile thereto, show its elevation. The sand banks forming the bar laid down in the said plan change their positions as the tides are more or less violent, but an idea may be formed of the situation and the ground it occupies.⁴

Mounted at Fort Matanzas at this time were two 8-pounder iron cannon.

B. Lieutenant Benham's Plans of the Fort and Inlet

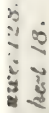
In the spring of 1842 and the summer of 1843 Lt. Henry W. Benham, the superintending engineer in charge of construction of the Fort Marion water battery, spent considerable time surveying Matanzas Bar and Inlets. As a result of his work, he prepared and submitted to Chief Engineer Joseph Totten two drawings. (Illus. 6 & 12) The first of these is titled, "Fort of Matanzas Inlet, 20 miles South of St. Augustine, E. Fla.," and features sections and elevations of the subject defense. In a marginal note, Lieutenant Benham wrote,

The masonry (laid in part at least upon wood) commences at the ordinary high water line--the upper bed of the foundation being about at the level of spring tides.

The substratum appears to be a firm shell bank--or rather a concretion of shells, differing however from the ordinary shell stone.⁵

4. De la Cruz to T. J. Bavid, undated enclosure found with ltr., John R. Bell to Secretary of War, Aug. 14, 1821, NA, Ltrs. Recd., Secretary of War, 1801-70, Microcopy M-221.

5. "Fort of Matanzas Inlet, 20 miles South of St. Augustine, E. Fla., by H.W. Benham, Lieut. of Engrs., June 1843," NA, RG 77, Dr. 128, Sheet 17. A copy of the subject drawing is on file at the Denver Service Center. (Illustration 12)



"Fort Matanzas Inlet" by Lt. H. W. Benham, 1843, National Archives

The second drawing is titled, "Triangulated Sketch, showing the positions of the Fort Matanzas Bar and Inlet; at the south end of St. Anastasia Island and 20 miles south of St. Augustine, Fla.," May 1842, by H.W. Benham. The drawing locates the fort in relation to the ocean, waterways, islands, and the mainland.⁶

Lieutenant Benham, for some unexplained reason, did not submit a report to accompany his drawings.

C. The Engineers Return to the Fort

In 1880 District Engineer Quincy A. Gillmore directed Capt. J.C. Post to visit Matanzas Inlet and define the reservation boundary. Post, on reconnoitering the area, reported the fort in "a decaying condition." This was the first interest, although limited, shown by the War Department in the Matanzas tower in nearly four decades.⁷

D. The tourist Industry Discovers Fort Matanzas

Beginning in the 1880s F.H. Reynolds began publishing his The Standard Guide for St. Augustine. Among the illustrations found in the Guide is an engraving made from a photograph of the west elevation of the "Matanzas Fort."

The textual description of the fort reads:

The remains of the Spanish fort are seen on the right bank as the boat approaches Matanzas. Its ruins are among the most picturesque in Florida. In the early morning and at sunset the fort and its surroundings present a scene of beauty well worth the journey to behold. The fort is of coquina and was built to defend St. Augustine from the approach of an enemy by way of Matanzas Inlet.⁸

Another tourist-oriented book published in St. Augustine at this time was Old St. Augustine: A Story of Three Centuries. Found on page 60 of this volume is a photograph titled, "Spanish

6. "Triangulated Sketch, showing the position of the Fort of Matanzas Bar and Inlet, "NA EG 77, Dr. 128, Sheet 18. A copy of the subject drawing is on file at the Denver Service Center.

7. Gillmore to Chief Engineer, Oct. 22, 1880, NA, RG 77, Ltrs. Recd., Chief Engineer.

8. F.H. Reynolds, The Standard Guide - St. Augustine, Illustrated (St. Augustine, 1886), pp. 82-3.

Fort at Matanzas Inlet" by W.A. Cox, featuring the west and south elevations of the fort. A similar photograph appears on page 93 in Verne E. Chatelain, The Defenses of Spanish Florida 1565 to 1763 (Washington, 1941).⁹

9. Charles B. Reynolds, Old St. Augustine: A Story of Three Centuries (St. Augustine, 1886) p. 60.

II. THE FORT BECOMES AN INTERESTING RELIC

A. The Fort as Seen by Lieutenant Scriven

1. He Views the Site

On January 29, 1885, 2d Lt. George I. Scriven of the 3d Artillery received orders from his post commander--Col. H.G. Gibson--to proceed to Matanzas Inlet, 16 miles south of St. Augustine. On arrival, he was to examine and report upon the condition of the ancient defense work known as "Fort Matanzas," and certain "old pieces of ordinance" said to be there.

Lieutenant Scriven and his party left in a railboat and conned a course up the Matanzas River. Reaching the site, they saw that the fortification stood "at the eastern extremity of a small, low, and marshy island lying northwest of the bar at the mouth of the river," and about one-half mile north of the bar. The island, present Rattlesnake Island, divided the river into two streams, the easterly one constituting the main channel. The island, Lieutenant Scriven estimated, measured about 300 acres. It was low, marshy and "intersected by small streams, one of which entirely divides it at high tides," and was covered with "coarse grass and mangrove bushes and is partially overflowed at high tides."¹

2. He Describes the "Base"

The fort, Lieutenant Scriven found, stood on the point of the island, where the river divided, "and about the level of ordinary high water"; but its foundations had been washed by flood tides "as

1. George P. Scriven, "Report on Fort Matanzas Florida," NA, RG 77, Ltrs. Recd., Chief Engineer. George P. Scriven of Illinois was graduated from the U.S. Military Academy as No. 5 in the Class of 1878. Commissioned a 2d lieutenant in the 8th Infantry, he was ordered to Benicia Barracks. In July 1879 he was sent to Fort Hamilton, New York, and transferred to the 3d Artillery. From July 1880 until August 1884, he was assigned to the Military Academy as assistant professor of French. Scriven then rejoined his regiment at St. Francis Barracks, Florida. Cullum, Biographical Register, Vol. III, p. 297.

shown by the deep marks of erosion upon its faces." He saw that the "general design" of the defense consisted of a

base of solid masonry; square in plan; 49 feet in length and breadth at the base; 16 feet in height from the ground to the top of the parapet which surrounds three of the sides. Resting upon this base as a foundation and extending the entire length of its northwest side, a tower rises 17½ feet above the upper surface of the base, this tower is rectangular in plan, with vertical walls, and has a height from the ground to the summit of 33½ feet.

The portion of the fort upon which the tower rested, and which Lieutenant Scriven referred to as the base, was a solid mass of coquina, having a batter of outer faces of 1½ feet from the ground in the crest. It was built of 12- by 18-inch blocks, laid in mortar.

The upper surface of the "base" constituted the terreplain. The latter was 11½ feet above ground level, and enclosed on three sides by a 4½-foot parapet. Its fourth side was formed by the southwest wall of the tower. On its northeastern face, the parapet was pierced by two embrasures which commanded the channel. The southeast and southwest parapets were not embrasured, although the latter was pierced by an opening resembling an embrasure, 3 feet 3 inches in width, that may have served a dual purpose--as a gun embrasure and a means of ingress and egress from the work by a ladder.

Lieutenant Scriven saw that the parapet had a modest superior slope, but no banquette. Lying on the terreplein, in a thick undergrowth, were two badly rusted cast-iron cannon.

There was a cistern, in a good state of preservation, though "quite dry," near the tower.

At the south angle of the open work, there was a stone platform, which had probably supported a watch tower. A passageway was cut through the parapet to permit access to and from the lockout.

The tower was also built of coquina blocks of approximately the same size as those used for the base. Its walls rose vertically from the base to a height of 33½ feet from the ground. "Its strongest face" was that commanding the entrance to the river. It contained two tiers of musketry loopholes, the upper at a height of 9 feet 6 inches from the terreplein and the lower at 7 feet.²

2. Scriven, "Report on Fort Matanzas, Florida," NA, RG 77, Ltrs. Recd., Chief Engineer.

3. He Describes the Tower

The tower, Lieutenant Scriven found, housed what had been the garrison's quarters and the magazine. It was rectangular in configuration, and consisted of two rooms, one above the other, extending in "length and breadth of the tower." The lower one of these rooms was on the level of the terreplein, of the outer work and communicated by a door directly with it.

In the northeast tower wall, there was a large fireplace, the chimney of which was circular and extended "to about the height of the parapet at the top of the tower." The northeastern and southwestern walls of the lower room has no openings; the southeastern wall, in addition to a door and window, was pierced by loopholes for musketry commanding the channel between the fort and the entrance to the river. The northwest was pierced by a window overlooking the island and marshes extending to the mainland beyond. The partition, dividing the upper and lower rooms, had all but disappeared. Some 10 feet of the partition remained, sufficient to show that it had been formed by wooden timbers extending from wall to wall, the ends of which were "let into the stone work of the walls and the whole leveled with a kind of cement."

To Lieutenant Scriven, the structure's "most singular" feature was a dark chamber or shaft, "probably used as a magazine," in the southwest wall. The entrance to this room was through a rectangular hole, 2 feet long by 1½ feet wide, in the wall of the upper chamber. This opening provided access to a "dark, sloping and narrow passage, starting from the place where the stone arch that supports the roof of the tower springs from the southwestern wall." This passage was about 5 feet long, and sloped downward into the side of a cylindrical chamber, or shaft, extending downward 6 feet from the bottom of the passage, and upward 6½ feet. Its diameter was 4 feet 2 inches.

The inner chamber gave "evidence of great skill and expense in the construction of its walls and of the stone dome," which constituted its ceiling. The stonework was carefully laid and demonstrated no evidence of deterioration. "Contained as it is, completely within the enormously thick southwest tower wall, dark and unventilated this room," Lieutenant Scriven speculated, "may have served either as a magazine or dungeon." The entrance to the passage.

giving access was partially protected by a stone screen 5 feet 3 inches high and $6\frac{1}{2}$ feet long and 8 inches thick, and positioned 5 feet from the wass, but in such a fashion as to allow a narrow passage between one end and the northeast wall of the room. Scriven presumed that the traverse (screen) shielded the entrance of the inner room from "coming in (from) the direction of the channel, and passing through the window in the southeast wall."

The roof of the tower was supported by an "enormously strong stone arch," 2 feet 4 inches thick at the top, and of much greater strength than necessary to support the weight of the roof. At the highest point of the arched ceiling, a square hole gave access to the tower roof. This arch sprang from the northeast and southwest walls at the height of the floor of the upper room.

The roof of the tower, Lieutenant Scriven reported, is sunk to a depth of 4 feet 6 inches, below the top of the wall, which served as a parapet. This roof was flat, apparently built of brick and stone, overlaid with cement. It was pierced by a chimney opening and one giving access into the upper room.

The roof parapet was $1\frac{1}{2}$ feet thick, had a superior slope of one-third, and an elevation above the ground of $33\frac{1}{2}$ feet. On the north west, or landside, there were two musketry loopholes. The length of the interior crest of the northwest parapet was $43\frac{1}{2}$ feet, and of the northwest parapet $11\frac{1}{2}$ feet. As there was no interior slope, the roof area available for defensive purposes was about 500 square feet. There was no exterior slope to the parapet, while the height of the roof was 29 feet above the ground. It thus commanded, Scriven noted, a good field of fire.

Around the sides of the tower ran two "fillets," the first 4 feet below the exterior crest, and the second $10\frac{1}{2}$ feet above the ground.³

4. He Measures the Structure

Lieutenant Scriven and his men measured the structure. They found and recorded:

3. Ibid.

Lower Portion, or "Base."

Length at ground	49 feet.
Breadth at ground	49 feet.
Length of interior crest of northeast parapet	25½ feet.
Length of interior crest of southeast parapet	39 feet.
Length of interior crest of southwest parapet	25½ feet.
Distance from towerwall to inner side of inner embrasure in northeast parapet	5 feet, 3 inches.
Width of embrasures--. Sides of embrasures fallen away, and distorted.	
Depth of embrasure	4 feet, 3 inches
Distance from wall of tower to inner side of outer embrasure in northeast parapet	14 feet, 6 inches.
Size of outer embrasure in northeast parapet-- same as of inner embrasure.	
Distance from wall of tower to inner side of embrasure in southwest parapet	4 feet.
Width of mouth of embrasure in southwest parapet	3 feet, 3 inches.
Command of outer work	16 feet.
Height of terreplein of open work from ground.	11 feet, 6 inches.
Height of interior crest above terreplein	4 feet, 6 inches.
Thickness of northeast parapet	4 feet, 3 inches.
Thickness of southeast parapet	6 feet.
Thickness of southwest parapet	3 feet.
The cistern is midway between the northeast and southwest parapet and about two feet from the wall of the tower. This cistern is cylindrical in shape, has a depth of 13 feet below the terreplein, and a diameter of 10 feet. The walls of the base have a batter of 1½ feet from ground to summit; and 10½ feet from the ground a coquina fillet extends entirely around this lower portion of the work.	
Tower	_____.
Height of roof above ground	29 feet.
Command of work	33 feet, 6 inches.
Height of parapet above terreplein of open work	17 feet, 6 inches.
Length of interior crest of northwest parapet.	43 feet, 6 inches.
Length of interior crest of northeast parapet.	11 feet, 6 inches.
Length of interior crest of southeast parapet.	43 feet, 6 inches.
Length of interior crest of southwest parapet.	11 feet, 6 inches.
Thickness of parapet	1 foot, 6 inches.
Distance from southwest wall to nearest loop-hole in northwest parapet	18 feet.
Distance from northeast wall to nearest loop-hole in northwest parapet	18 feet.

Distance between centres of loop-holes 9 feet.
 Height of interior crest of parapet above roof of
 tower 4 feet, 6 inches.
 Superior slope of parapet 1/3 foot.
 Height of upper room from floor to top of arch. 8 feet, 3 inches.
 Width of upper room from floor to top of arch. 10 feet, 6 inches.
 Length of upper room from floor to top of arch 26 feet, 6 inches.
 Size of opening through roof 2 feet by 1 foot, 6 inches.
 Height of windows in northwest wall midway between
 northern and western salients from floor of
 upper room 5 feet.
 Size of window in northwest wall . . . 2 feet by 2 feet, 6 inches.
 Window in southeast wall on level with floor of upper room.
 Distance of center of window in southeast wall from
 northeast wall 24 feet, 6 inches.
 Height of bottom of window from terreplein . . 6 feet, 10 inches.
 Width of window, southeast wall 3 feet, 4 inches.
 Height of loop-holes in southeast wall of upper room
 from terreplein 7 feet.
 Height of loop-holes 1 foot, 6 inches.
 Height of loop-holes above floor of upper room. 4 feet, 3 inches.
 Distance of center of entrance to dark chamber from
 southeast wall 5 feet, 4 inches.
 Height of lower side of opening above floor of
 upper room 2 feet.
 Size of entrance 2 feet by 1 foot, 6 inches.
 Length of screen in front of opening 6 feet, 6 inches.
 Height of screen in front of opening 5 feet, 3 inches.
 Thickness 8 feet.
 Thickness of southwest wall between outer room
 and inner chamber, or magazine 13 feet, 10 inches.
 Consequent thickness of wall between magazine and
 outer surface of southwest wall 2 feet.
 Diameter of inner chamber or magazine 4 feet, 2 inches.
 Height of inner chamber or magazine 12 feet, 6 inches.

Lower Room

Length of lower room 26 feet, 6 inches.
 Width of lower room 10 feet, 6 inches.
 Height of lower room 6 feet, 9 inches.
 Width of door 3 feet, 9 inches.
 Distance from northeast parapet to nearest side
 of door 16 feet, 6 inches.
 Distance from southwest parapet to nearest side
 of lower window in southeast wall 10 feet, 8 inches.
 Size of window 2 feet by 1 foot, 10 inches.
 Height of lower tier of loop-holes above
 terreplein 4 feet, 6 inches.

Size of loop-holes--lower tier 1 foot by 10 inches.
Distance between loop-holes--lower tier 2 feet.
Height of loop-holes above floor of room. . 4 feet, 6 inches.
Windows in northwest wall of lower room midway
between walls.
Thickness of northeast wall of tower 10 feet.
Thickness of southwest wall of tower 10 feet.
Thickness of northwest wall of tower 2 feet.
Thickness of southeast wall of tower 2 feet.⁴

5. He Calls Attention to Structural Failures

The structure, Lieutenant Scriven observed, was rapidly "falling into decay; the walls, undermined by the actions of the tides" were settling and cracking. This erosion was most extensive under the east and south salients, where it had seriously damaged both the northeast and southeast faces. The faces on both sides of the east salient were so badly cracked that the east corner of the "work has searated from the remainder, and settled some feet below it, as shown" in photographs Nos. 1 and 2. The northeast side of the tower was in good repair.

On the northwest front, the lower wall was "intact, but the tower badly seamed cracked (vide photograph No. 3), and the stones of the upper part of the arch" were about to yield. The northwestern section of the tower parapet was likewise in "a dangerous state."

Lieutenant Scriven pronounced the southwest facade as the best preserved, although its foundation was seamed and undermined.

The southeast face was cracked and "badly undermined," while the terraplein of the first tier was overgrown by rank vegetation. There was also a dense atop the tower, which had forced its way into the joints and seemingly grew "from the stone and cement" forming the roof. The stones of the arch supporting the roof had been displaced and the arch, itself, looked as if it were about to fall.

Minor repairs, Scriven concluded, were necessary if the fort were to be preserved in its present form. The most important of these were: (a) supports for the portion of the undermined walls; (b) re-inforcing the arch of the tower; and (c) perhaps, "an iron band placed around the tower itself to keep the arch from spreading."

The fort, he noted, could never have any value as a defense installation, and, moreover, it was not worth restoration to its eighteenth century condition. But, he continued, as a "relic of the Spanish" heritage, a small sum might be well spent for the preservation.⁵

4. Ibid.

5. Ibid.

6. He Describes the Cannon

Lieutenant Scriven, on examining the two abandoned cannon, believed them to be of British manufacture, probably dating to the years that the English held Florida. They measured 9 feet 3 inches from the cascabel to face; the bores were about 4.2 inches, but the muzzles were so rusted that it was impossible to ascertain the original diameter. The distance from the trunnions to the face was 4 feet 4 inches; the trunnions were on the "Line of axis of piece; swell of muzzle; 4 fillets; all surface marks effaced by rust."⁶

7. He Investigates the Title

Upon investigating records on file in St. Augustine, Lieutenant Scriven found that, although the structure probably belonged to the United States, the island on which it stood had been ceded to the State of Florida by Congress by an act relating to "swamp and overflow lands." Although the island had not been surveyed, a canal being built by the Florida Coast Line Canal Company could be expected to confirm the company's title to the fort site. Checking with the company, Lieutenant Scriven learned that it would be willing to cede to the United States its claim to 40 acres occupied by and surrounding the fort.⁷

B. The Fort as Seen by Captain Black in 1890

On February 28, 1890, Representative Robert Bullock of Florida introduced legislation (HR 7629) into the 2d Session of the 51st Congress HR 7629, which was referred to the House Committee on Military Affairs, authorized the appropriation of \$5,000 "for the preservation of Fort Matanzas."⁸

The Chief Engineer when called on for a report on the subject by Congress, wrote Capt. William M. Black, the Florida District Engineer. Black was to advise the Department of the fort's condition, the extent of the reservation, the use now made of it, and "the sufficiency of the sum named in the bill for the purpose mentioned."⁹

6. Ibid.

7. Ibid.

8. HR 7629, February 28, 1890, NA, RG 77, General Correspondence 1890-92, Doc. 2268.

9. Chief Engineer to Black, undated, NA, RG 77, General Correspondence 1890-92, Doc 2268.

Whereupon, Captain Black informed the Department that Fort Matanzas was on a marshy spit on the west side of the Matanzas River, a short distance north of Matanzas Inlet. It was a masonry structure about "50 feet square at the base and built solid for 10 feet from the surface of the marsh." The north elevation of the fort was carried up for its full width, to form a tower, having its top 30 feet above the surface of the marsh. The depth of the tower was 13 feet, and it houses one large arched chamber and two smaller ones, "one of which is fashioned above the top surface of the arch in the west spandrel and reached by a curious winding passage." The remainder of the fort constituted a terreplein, with a parapet, on which the cannon were mounted. A cistern was built in the body of the masonry. Two dismantled iron guns "of ancient" pattern lay on the terreplein.

Sketches, which he enclosed, depicted the fort's exterior. The interior of the tower, he informed the Chief Engineer, was in a ruinous condition. If repairs were not soon made, he cautioned, the tower would be destroyed, because the interior arch acted as a "wedge which opens the crack wider with every heavy rain." On the east face, the fort was, during storms, being undermined by the tidal river.

The fort, although it was of no defensive value, was an "exceedingly interesting and picturesque relic" of the Spanish regime, and as such was visited by tourists.

Captain Black assured the Department that "repairs such as are necessary to prevent the destruction of the old fort can be made for \$5,000 if the work can be done before further deterioration takes place."¹⁰

The Department returned Captain Black's sketches of the fort on March 24. We have been unable to find these sketches, which on their return from Washington, should have become part of the records of the District Engineer's Office, now on file at the East Point, Georgia, Records Center.

Representative Bullock's bill died in Committee, and the War Department, its time, money, and energy engrossed by planning for and construction of the Endicott System of coastal fortification, was unprepared to devote any of its resources to preservation of obsolete defenses. Captain Black's report was accordingly pigeonholed. A number of years were to pass before the Department's attention was again called to Fort Matanzas.

10. Black to Chief of Engineers, March 17, 1890, NA, RG 77, General Correspondence 1890-92, Doc. 2268.

III. THE 1916-17 REPAIR OF THE FORT

A. The Florida Congressional Delegation Vainly Seeks Preservation Legislation

1. Constituents Seek Congressional Actions

Early in the spring of 1906 Senator James P. Taliaferro of Florida received a letter from a constituent. The voter reported that there was a "break in the side walls" of Fort Matanzas "from the ground to the top of the building." This causes "the ends to settle and the opening to widen." The cost of effecting repairs would not exceed \$400, the writer assured his senator.¹

Senator Taliaferro, upon forwarding his constituent's letter to the War Department, called attention to the desirability of preserving Fort Matanzas. Upon assessing the Corps of Engineers' heavy commitments for maintenance and repair of the Endicott defenses, Chief Engineer Alexander Mackenzie held that the limited funds available dictated that they be restricted to "fortifications forming an actual part of the coast defense and omitting the obsolete works."²

Three years passed before the War Department's attention was again called to its "abandoned and crumbling fort on the Matanzas River." On April 6, 1909, J.E. Ingraham, an official of the Florida East Coast Railway, wrote Florida Senator Duncan U. Fletcher. He informed his senator that the fort was overgrown with trees and climbing shrubs, "which are disintegrating the walls by their roots." Unlike Fort Marion it was not being preserved by the Army. It, however, deserved to be, because it was an interesting relic and had constituted an important element in the Spanish defenses of St. Augustine.

District Engineer Capt. George R. Spalding, with whom Ingraham, has discussed the subject, agreed that the Corps should take action to save Fort Matanzas. Ingraham believed a \$3,000 appropriation would suffice.³

1. Taliaferro to Secretary of War, March 28, 1906, NA, RG 77, General Correspondence 1894-1924, Doc. 58912.

2. Mackenzie to Taliaferro, May 28, 1906, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/1.

3. Ingraham to Fletcher, April 6, 1909, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/3.

The Department's position, however, had not changed. Relying to the Ingraham letter, which Senator Fletcher had transmitted to Secretary of War Jacob M. Dickinson, Chief Engineer William L. Marshall, noted that "demands upon the current appropriation for preservation and repair of fortifications" were so great that he could not foresee how any funds could be allotted for obsolete works such as Fort Matanzas.⁴

2. Representative Clark Introduces H.R. 18011

United States Representative Frank Clark of Florida, in an effort to overcome the financial roadblock, dropped a bill into the hopper of the 2d Session of the 61st Congress. H.R. 18011 provided for preservation of the "old fort at Matanzas Inlet." Section No. 1 directed the War Department to place a "custodian in charge of the old fort ... for the purpose of preserving and caring" for the same.

In accordance with Section No. 2, the Secretary of War was to "cause such repairs to the said fort to be made" as were "in his judgment necessary to preserve the same from deterioration and decay and to keep it as near as may be in its original form as to architecture and immediate environment." To accomplish this, \$25,000, or as much thereof as necessary, would be appropriated.⁵

Clark's bill was referred to the Committee on Military Affairs. To secure information on the subject, the Committee called upon the War Department, and the Chief Engineer delegated this task to District Engineer Spalding at Jacksonville.

Captain Spalding, upon reviewing the subject, concluded that \$25,000 was ample to fund "restoration and preservation of this old fort, and for the employment of a ... keeper to look after same for at least five years." To provide data on the fort's structural condition, Spalding enclosed, with his letter, a copy of Captain Black's 1890

4. Abbot to Dickinson, May 4, 1909, and Oliver to Fletcher, May 6, 1909, NA, RG 77, General Correspondence, Doc. 58912/4.

5. H.R. 18011, 2d Session, 61st Congress, Jan. 13, 1910, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/10.

report and two photographs showing the current condition of the works. He reminded the Chief Engineer that "some further deterioration of the fort has taken place" since Black's report.⁶

3. Representative Clark Trys Again

H.R. 18011 died in Committee. Undaunted, Representative Clark on July 1, 1911, introduced a similar bill into the 1st Session of the 52nd Congress. Once again, it was referred to the House Committee on Military Affairs.⁷

When called on by the Chief Engineer for a report on H.R. 12214, as the bill was designated, Capt. John R. Slattery, who had replaced Spalding as District Engineer, noted that \$25,000 was sufficient to implement the legislation's goal. Describing the fort as "a picturesque ruin," of no "utilitarian value" but of considerable historical and architectural interest, he called for its preservation.⁸

H.R. 12214, like its predecessor, was pigeonholed by the committee.

4. The Department Takes a Strong Position Against S. 1898

Some 20 months later, following inauguration of Woodrow Wilson as 28th President on March 4, 1913, the Florida congressional delegation again took action. On April 17 Representative Clark introduced a bill, H.R. 2899, into the 1st Session of the 63d Congress. Its phraseology was identical to H.R. 18011 and H.R. 12214. In accordance with House rules, it was sent to the Committee on Military Affairs.⁹

When asked to comment on H.R. 2899, District Engineer Slattery (who had been promoted to major in February 1918) recommended that Fort Matanzas be preserved by the United States and that it be placed in charge of a caretaker. He believed that \$25,000, the sum cited, would be sufficient for restoration and preservation of the fort, and

6. Spalding to Chief Engineer, Jan. 25, 1910, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/5. The Spalding photographs are missing from the file.

7. H.R. 12214, 1st Session, 62nd Congress, July 1, 1911, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/13.

8. Slattery to Chief Engineer, Aug. 1, 1911, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/12.

9. H.R. 2899, 1st Session, 63d Congress, April 17, 1913, NA, RG 77, General Correspondence, Doc. 58912/18

employment of a caretaker to look after it for several years.¹⁰

Then in mid-May Senator Fletcher introduced a companion bill for "preservation of the old fort at Matanzas Inlet, and making appropriation therefore." To accomplish this goal, S. 1898, as it was designated, called for an expenditure of \$10,000. The Fletcher bill was referred to the Senate Committee on Military Affairs.¹¹

District Engineer Slattery was called on for back-up information. When he made his report, he reminded Chief Engineer William H. Bixby that no "actual estimate" had been made as to the cost of measures for preservation of Fort Matanzas. Moreover, an accurate estimate for this type of work was difficult to calculate. He, however, questioned whether \$10,000 would be sufficient. An appropriation of \$25,000, as called for in H.R. 2899, would be adequate.¹²

On November 19 Secretary of War Lindley M. Garrison reported to the Senate Military Affairs Committee that "Fort Matanzas stands on a pit of marshy land on the west side of the Matanzas River," a short distance north of

Matanzas Inlet. It is mentioned by Oglethorpe in 1740 in his report on the defenses of St. Augustine and was garrisoned during the Spanish and English ownership of Florida. It is a masonry structure about fifty feet square at the base and built solid for ten feet from the surface of the marsh. The north end of the structure is carved up for its full width to form a tower, having its top 30 feet above the marsh surface. The tower is 13 feet in depth and contains one large arched chamber and two smaller ones, one of which is fashioned above the top surface of the arch in the west spandrel and reached by a curious winding passage. The remaining portion of the structure formed a terre-plein, with parapet, on which the guns were mounted. A cistern was built in the body of the masonry. Two dismantled iron guns of ancient pattern lie on this terreplein.

The interior of the tower is in a ruinous condition. The arch acts as a wedge which opens the cracks wider with every heavy rain. On the east face the fort is undermined by the sea, during storms.

10. Slattery to Chief Engineer, April 28 and May 6, 1913, NA, RG 77, General Correspondence 1894-1924, 58912/17.

11. S. 1898, 1st Session, 63d Congress, May 14, 1913, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/19.

12. Slattery to Chief Engineer, Nov. 12, 1913, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/20.

The Acting Chief Engineer, the Secretary noted, was doubtful whether the proposed expenditure, \$10,000, called for in S. 1898 would suffice.

As Fort Matanzas did not commemorate any "patriotic effort connected with the life of the Republic," the United States flag never having flown over it, the Department believed that the \$10,000 could be devoted to a more fitting military memorial. In addition, it was feared that favorable consideration of S.1891 "would establish an unfortunate precedent." Secretary Garrison therefore recommended that it not be enacted.¹³

In view of the position taken by Secretary of War Garrison, S. 1898, like H.R. 2899, remained bottled up in committee, where it died.

B. The War Department Enters the Preservation Field and Fort Matanzas is Declared a National Monument

At hearings before the Sub-committee of the House Committee on appropriations of the 3d Session of the 63d Congress, the question was raised and discussed as to the "advisability of the United States maintaining" its obsolete but historical significant fortifications. Members of the sub-committee were of the opinion that such an expenditure was justified, provided the cost was not too great. The Chief Engineer was accordingly requested to submit at the winter of 1915-16 hearings on the Fortifications Bill, a "report with plans as to the cost upon the desirability and manner of preserving our older forts."

To appraise the field of this, a letter was circulated by the Chief engineer, requesting District Engineers to investigate the present condition of all "old fortifications" for which they were responsible and to submit of "report as to the means, cost, feasibility and advisability of preserving the same."¹⁴

13. Garrison to Chairman, Senate Committee on Military Affairs, Nov. 19, 1913; Burr to Chief Engineer, Nov. 17, 1913, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/23 and 58912/24. Acting Chief Engineer Edward Burr had suggested to the War Department that the preservation of the fort was "desirable." His recommendation had been reversed by the Secretary of War.

14. Winslow to District Engineer, Feb. 4, 1915, NA, RG 77, General Correspondence 1894-1924, Doc. 96697.

During the next four months, the Chief Engineer received from the field the requested data pertaining to obsolete defense, as well as other historic sites for which the War Department was responsible. The District Engineer, at Jacksonville, listed three sites he believed fell into this category--Fort Matanzas, Fort Marion, and the St. Augustine National Cemetery. Fort Matanzas, he noted, was a "masonry structure about 50 feet square," and was "in danger of destruction by the elements unless so reclaimed." It was an exceedingly interesting and picturesque relic of the Spanish occupation, and as such is visited by tourists."

District Engineer William Ladue's letter was removed from the Corps of Engineer files in 1937 by a Mr. Guinn of the Department of Interior and never returned. Consequently, we do not know whether Ladue, as called for, also provided data "as to the means, cost, feasibility and advisability of perserving" the fort.¹⁵

After evaluating this information, the Secretary of War on July 17, 1915, issued Bulletin No. 27. This was to assume landmark dimensions in the fight to preserve obsolete defenses, as well as monument for which the War Department was responsible. The first paragraph of Bulletin No. 27 detailed the "Act for the preservation of American antiquities," signed into law by President Theodore Roosevelt on June 8, 1906. Attention was called to Section No. 2 of the act, providing that the President was authorized

to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned and controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

Under provisions of the Act of June 8, 1906, Secretary of War Garrison then proceeded to declare a number of historic landmarks and structures, for which he was responsible, national landmarks. Among those enumerated was Fort Matanzas.¹⁶

15. War Department General Orders and Bulletins for 1915 (Washington, 1916), Bulletin No. 27, Corps of Engineer Files, NA, RG 77, General Correspondence 1894-1924, Doc. 96697/101-112.

16. Ibid.

Senator Fletcher, who because of the seniority system had acquired a position of power in the Senate, now tried a new approach to secure funds for preservation of Fort Matanzas. On September 20, 1915, he wrote Secretary Garrison, pointing out that the fort was "an interesting and picturesque work and worthy of preservation." It had, he continued, been designated a National Monument under the Act of June 8, 1906.

By War Department Bulletin No. 27 July 17, 1915, instructions had been promulgated to give these monuments "such care and protection as may be possible by the utilization of materials and labor at hand, without expense to the Department."

So far as Senator Fletcher could determine, the Department as yet had done nothing to repair, preserve or maintain the fort. If measures had been taken while Colonel Black had been District Engineer (1886-1805), much "deterioration which has taken place since would have been avoided, and at a very nominal expense it could be repaired now, and could be kept in decent condition." Because of this short-sighted view, District Engineer Slattery had placed the current cost of preservation measures at \$10,000.

If there were no funds available for preservation of the fort, Senator Fletcher trusted the Department would make recommendations for such an appropriation. He was also hopeful that the Department could modify the instructions given in Bulletin No. 27 to eliminate the words, "without extra expense to the War Department."¹⁷

As requested, the War Department provided the requested copies of Bulletin No. 27, but declined to make the regulated word change.¹⁸

C. President Wilson Enlarges and Defines the Fort Matanzas Military Reservation

Senator Fletcher, at the same time, had called attention to ownership of the site. According to records available to the Senator, the site had been reserved to the United States by the Secretary of War, under his order of March 23, 1849. As this might be interpreted to mean only the site occupied by the fort, Fletcher, to prevent a person or persons from making an entry on land adjacent to the structure, urged Secretary Garrison to "lay off a suitable reservation about the work, and have it set apart as a reservation." An air of urgency had been added to this problem by news that someone had homesteaded on Rattlesnake Island, and had erected a house just south of Fort Matanzas.

17. Fletcher to Garrison, Sept. 20, 1915, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/24.

18. Kingman to Fletcher, Oct. 7, 1915, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/25.

He recommended that the United States promptly preserve the "point of marshland" on the west side of the Matanzas River, on which the fort was situated.¹⁹

Upon checking its files, the Department learned that Secretary of War Reverdy Johnson on March 13, 1849 had requested the General Land Office to reserve from public sale certain lands on the Florida coast, including "all the public land in the town of Saint Augustine and vicinity, including the site of the work and Matanzas Inlet." Some 14 months later, the Commissioner of the General Land Office had notified the War Department that measures had been taken to reserve for public defense those lands cited in the Secretary's March 23 letter.

Some four decades later, in the early 1890s, the Florida Commissioner of Agriculture wrote Captain Black, then District Engineer, that from the maps and records available to his office, "it appears that the S.E. 1/4 of S.E. 1/4 of section 14, and N.E. 1/4 of N.E. 1/4, section 23, Tp. 9. S. R. 30 E. belongs to the United States." Moreover, he continued, Sections Nos. 14 and 23, Township 9, along with other sections in the same township, had been selected by the State as "swamp lands as insuring to the state under the Swamp Land Act of September 28, 1850, but have never been patented to the state and the state has no control over the sale or disposition of them."

Then, on August 8, 1894, the District Engineer had reported that the Fort Matanzas site was included in the St. Augustine Reservation, as reserved by President Taylor on March 23, 1849. The site, itself, was "inside of the inlet about one mile, and upon a small island." Apparently, the Department's spokesman continued, a legal description of the meter and bound had never been entered.²⁰

To secure additional information on the subject, the Chief Engineer called on Major Slattery for a report on the title to the site; and his opinion as to desirability of marking the limits of such as were the property of the United States.²¹

19. Fletcher to Garrison, Sept. 20, 1915, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/24.

20. Breckinridge to Secretary of the Interior, Sept. 25, 1915, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/25.

21. Winslow to District Engineer, Oct. 16, 1915, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/25

Major Slattery, after visiting the site and reviewing the documents, informed Chief Engineer Dan C. Kingman that Fort Matanzas was on Rattlesnake Island, south of the present main channel of the Matanzas River, in the southwest quarter of Section 12. 14, Township 9 South, Range 30 East. The files indicated that all of Section No. 14 still belonged to the United States. The status of so much of this group of marsh islands as in the northeast quarter of Section No. 23 was unclear. But as the State of Florida's claim to the wetlands in Section No. 23 had been rejected, and as they were north of what was formerly the main river channel. Slattery reasoned the courts would sustain his opinion that they likewise belonged to the United States.

Contrary to what Senator Fletcher had heard, there were no improvements on these islands, and they were of no agricultural or commercial value. Slattery therefore recommended that action be taken to reserve the group of marsh islands in the Matanzas River, in the southeast quarter of the Matanzas River, in the southeast quarter of Section No. 14 and the northeast quarter of section No. 23, as the site of the fort. He also requested authority to identify these wetlands as United States land with inexpensive wooden markers.²²

Then, on April 3, 1916, at the request of Secretary of War Newton D. Barker, President Woodrow Wilson signed an Executive Order, "defining and setting apart" as Fort Matanzas Military Reservation certain "described lands, lying in Matanzas River." Included were the entire group of marsh islands situated in the subject river "south of the main channel thereof, near the mouth of the said river, in the S.E. 1/4 of Section 14 and the N.E. 1/4 of Section 23, Township 9, South, Range 30 East, about 15 miles to the southward of Saint Augustine, Florida."²³

D. The 1916-17 Restoration

1. The Sherley Committee Calls for a Report

On May 30, 1916, President DeWith Webb of the St. Augustine Institute of Science and Historical Society, having learned that Congress was considering the Fortification Bill for Fiscal Year 1917, wrote Representative Swagar Sherley, Chairman of Sub-committee on Fortification

22. Chief Engineer to Secretary of War, March 4, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/25.

23. Wilson to Baker, April 3, 1916, and Executive Order, Fort Matanzas Military Reservation, Florida, April 3, 1916, NA, RG 77, General Correspondence 1894-1924, Docs. 58912/37 and 58912/38.

of the House Appropriation Committee. He warned Sherley that Fort Matanzas was "fast falling into ruin." He hoped the House Appropriations Committee and the Congress would take remedial action to save the fort from "further destruction."²⁴

Representative Sherley referred Webb's letter to Maj. Gen. William M. Black, who had been named Chief of Engineers on March 7, 1916. On doing so, he inquired, "Is it not possible out of the existing fund for the preservation and repair of fortifications to do what necessary work may be needed to prevent the deterioration of the fort."²⁵

Although he had been long sympathetic to the preservation of Fort Matanzas, General Black gave little encouragement to Representative Sherley's request. He reported that the best general estimates indicated that restoration of the fort would cost from \$10,000 to \$25,000.

The estimates submitted for Fiscal Year 1917 by the Department for preservation and repair of fortifications had called for a minimum of \$250,000. The subcommittee had reduced this figure to \$226,000, a sum unlikely to fund necessary repair and maintenance of the Nation's modern seacoast defenses. Unless additional monies were appropriated, it would be impracticable to allot any money for repair of old works like Fort Matanzas.

General Black reminded Representative Sherley that Fort Matanzas was but "one of many old forts requiring similar treatment to prevent them from falling into condition beyond repair."

He, however, was calling on District Engineer Maj. William B. Ladue to make a careful examination of the fort and to submit an estimate of the "cost of doing such work as may be absolutely essential to prevent the old fort falling to pieces." If the estimate were small enough, an allotment for this purpose might be possible, without

24. Webb to Sherley, May 30, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/40.

25. Sherley to Black, June 1, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/39.

diverting funds from essential projects.²⁶

2. Major Ladue's Estimates

Major Ladue, after examining the documents on file in his office, prepared and submitted a program aimed at "preserving the fort from total destruction." He called for:

- (a) The repair of southwest face, which has two wide cracks extending from foundation to parapet. The walls were to be drawn together with turnbuckles and rods, the broken stones removed, and cracks filled in \$ 300
 - (b) The wall on the southeast corner of the fort has broken and a long section has tilted over so that it is likely to fall into the marsh. Wooden piles should be driven at the base of the wall to prevent further sinking of the foundation until funds are available for rebuilding the wall \$ 300
 - (c) The arch at the rear of the southwest face forming the roof over the casemake, and the parapet platform were fractured, and liable to fall. The arch should be rebuilt..... \$ 400
 - (d) Trees and brush growing inside the fort were to be removed to prevent their roots from further damaging the walls..... \$ 25
- Total..... \$1,025

Additional work proposed in the former estimates, Major Ladue assured General Black could be postponed for the time being without serious injury to the structure.²⁷

Apprised of these actions, Senator Nathan P. Bryan of Florida forwarded to Secretary of War Baker a petition signed by Governor Park Trammell of Florida and many citizens of St. Augustine, asking an appropriation for preservation of Fort Matanzas. According to the Senator's informants, less than \$500 would fund its repair.

26. Black to Sherley, June 8, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/39. Major Ladue had replaced Major Slattery as District Engineer in December 1913.

27. Ladue to Black, July 5, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/39.

The figure, he noted, represented only a small part of the pending bill before Congress, asking for \$25,000 for "protection preservation, and repair of fortifications" in Fiscal Year 1917.²⁸

3. Congress Makes an Appropriation and the Department a \$1,025 Allotment

Meanwhile, Congress had acted. The Fortifications Bill, signed into law by President Wilson on July 6, 1916, included \$25,000 for preservation of obsolete coastal defenses. Relaying this news to Senator Bryan, Chief Engineer Black assured him that this would facilitate measures for the early repair of Fort Matanzas.²⁹

On July 18 General Black, upon reviewing Major Ladue's estimates and the Corps' nation-wide commitments, allotted \$1,025 from the appropriation for "preservation and repair" for repair of the fort.³⁰

Upon learning of General Black's actions, Dr. Webb wrote him, expressing the Society's appreciation of his role in seeing that funds were provided for repair of Fort Matanzas. He hoped Black would find time to come down to St. Augustine "to see how the trees have grown," which you planted on the reservation grounds, while District Engineer in the 1890s.³¹

4. The Corps Takes Action

Visiting the site, preparatory to beginning operations, Major Ladue found that the fort was enclosed in a "crude sheet pile wall make by driving close together palmetto piles about 6 inches in

28. Bryan to Baker, July 7, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/43. Senator Bryan had been appointed to represent Florida in the Senate on March 3, 1911. He replaced Senator James P. Taliaferro.

29. Black to Bryan, July 12, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/43.

30. Winslow to District Engineer, July 18, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/34.

31. Webb to Black, July 26, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/47.

diameter." The walls of the fort were founded upon a bed of oyster shells, placed directly on the sand. During the years some of the shells had slipped between the piles, permitting the walls to settle badly. The walls were built of coquina blocks, "laid upon in random rubble fashion, though the blocks were laid in mortar made with lime supposed to have been produced by burning of calcining shell."

The arch supporting the parapet had been laid up with accurately cut blocks. Little or no mortar seemed to have been employed between these blocks. The embrasure openings had been cased with cedar, fragments of which were still in position.

The flooring of the second tier casemate room was a shell lime composition, supported by pine joists spaced on 22-inch centers. One section of this floor was partially intact, and an effort would be made to restore this section by utilizing the ancient wooden beams.

Before doing anything else, a crew was turned to removing the rubbish and vegetation from the parapets and terreplein. It was found that the roots of this jungle of cedar, oak, and myrtle extended as much as 14 feet into the masonry. The arch had settled until the center stones had dropped some 2 feet. To rebuild the arch, which formed the roof over the tower room and supported the parapet platform, to its original lines, "wooden false work was built underneath and the original stones" were "wedged back to the proper place." The face of the wall fronting the terreplein was reconstructed, and the tower repaired by positioning steel rods equipped with turnbuckles, after first drawing in the blocks on the north face to close the break, and subsequently placing turnbuckle rods through "the parapet fill between the northeast and southwest walls." The cracks were then closed with coquina blocks laid in Portland cement.³²

By December 11 the \$1,025 allotment was nearly exhausted. Relaying this information to the Department, District Engineer Ladue called for another \$100 to: (a) rebuild the face of the wall fronting the terreplein to protect the newly restored arch and rooms; (b) complete placing concrete under northeast corner; (c) replace sandfill over arch; (d) position steps; (e) build walkway to boat landing; (f) lay small sections of wood flooring in second tier room; (g) fix face of west wall; (h) position cannon; and (i) rebuild one panel of second tier room.³³

32. Ladue to Chief Engineer, July 5, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/40.

33. Ladue to Black, Dec. 11, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/48.

Chief Engineer Black, recognizing the merit in the request, allotted another \$100 for the rehabilitation of Fort Matanzas.³⁴

In the spring and summer of 1917 another \$32.60 was allotted by the Department to complete the first stage of the restoration focusing on the tower.³⁵

Entry of the United States into the Great War on April 6, 1917, effectively ended for a number of years the expenditure of War Department funds for repair and maintenance of obsolete fortifications.

34. Winslow to Ladue, Dec. 12, 1916, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/48.

35. Winslow to District Engineer, April 5, 1917, NA, RG 77, General Correspondence 1894-1924, Doc. 58912/49.

IV. FORT MATANZAS -- A WAR DEPARTMENT STEP-CHILD

A. The Department Evaluates its Commitments

1. General Black Briefs the Department

The United States, in the years immediately following World War I, drastically slashed its military expenditures. To cutback its responsibilities, in view of limited funding, the War Department sought to dispose of surplus property having little or no value to its principal missions.

Consequently, on October 15, 1921, the Adjutant General issued instructions relative to disposal of real estate no longer needed by the War Department. Among the Florida parcels to which this applied were Forts Matanzas and Marion.¹

Before acting on the proposal to dispose of Fort Matanzas, Secretary of War John W. Weeks contacted Maj. Gen. William M. Black, who had retired as Chief of Engineers on October 31, 1919. General Black was familiar with the subject. He had been stationed in St. Augustine from 1886 to 1895, first as assistant to Capt. William T. Russell and then as District Engineer.

General Black accordingly explained to Secretary of War Weeks that Fort Matanzas was an "ancient stone fort somewhat similar to a "Martello Tower." It was on a marshy island, 15 miles south of St. Augustine, and was formerly on the shore of Matanzas Inlet for the defense of which it had been built. The inlet, however, had moved southward and sand dunes now hid the fort from the sea. When he had last inspected the structure, some 32 years before, it had been in a "fair state of preservation," but a small amount of repair was urgently needed."

On October 5, 1893, General Black continued, the State of Florida had ceded to the United States jurisdiction over the land on which the fort was situated.

He urged that the District Engineer at Jacksonville be directed to "inspect and report on Fort Matanzas and that sufficient action be taken to insure its preservation."²

1. Boggs to Secretary of War, July 10, 1922, NA, RG 79, Fort Matanzas, War Dept. Files.

2. Black to Weeks, July 13, 1922, NA, RG 79, Fort Matanzas, War Dept. Files.

After studying Black's letter and evaluating the consequences of disposing of Fort Matanzas, Secretary Weeks referred it to the Chief of Engineers. He urged that the subject be submitted to the Florida District, with instructions to inspect and report on Fort Matanzas, and make recommendations as to its "preservation, retention or disposition."³

2. District Engineer Lemon Recommends that the Army Retain the Site and Repair the Fort

On July 26, 1922, the Chief Engineer's Office called on District Engineer Maj. William C. Lemon to inspect Fort Matanzas and submit a report on its condition and the estimated cost of its preservation. After visiting and photographing the structure and a review of plans and correspondence, Major Lemon wrote the Chief Engineer.

To place the fort "in a fair state of preservation and to prevent undue deterioration," it would be necessary to: (a) completely remove the south wall; (b) drive pilings to give it a secure foundation; and (c) rebuild it. The terreplein should also be removed and reconstructed.

Based on the District's recent experiences, Major Lemon believed that the 1916 figure for this work, \$10,000, was too high, and that satisfactory repairs could be effected for a considerably smaller figure. His revised estimate included:

For removing and rebuilding south wall (concrete with coquina ... facing)	\$2,850
For driving piling for foundation and making some necessary fill	\$ 400
For removing and rebuilding the floor of the terreplein	\$ 800
For clearing trees and roots and clearing up rubbish	\$ 50
For repairing walls where roots have opened cracks \$	<u>100</u>
Total	\$4,100

A larger sum, Major Lemon continued, could be disbursed in further rehabilitation of the fort; landscaping the grounds; and construction of a boat landing. But in view of the inaccessibility of Rattlesnake Island, it was believed that it would not be good policy to spend more than is "absolutely necessary to its proper preservation."

3. Boggs to Lemon, July 26, 1922, NA, RG 79, Fort Matanzas, War Dept. Files.

Major Lemon, in view of "the fort's unique type of constructio," its significance to the context between Spain and Great Britian, and the public interest focused on the site, concluded that the War Department should retain and maintain the area.⁴

3. Secretary Weeks Authorizes the Fort's Repair

Secretary of War Weeks, after reviewing District Engineer Lemon's report, authorized Chief Engineer Lansing H. Beach "to submit with his estimates for the year 1924, the sum stated to be needed" for placing Fort Matanzas in good condition.⁵

B. The 1924 Corps of Engineer Projects

1. A Proposal is Formulated and \$2,375 Allotted

Funds for the Fort Matanzas preservation were included in the War Department appropriations for Fiscal Year 1924, enacted by the IV Session of the 67th Congress and signed into law by President Warren G. Harding on March 2, 1923. Consequently, on January 7, 1924, Assistant Engineer J. M. Braxton of the Jacksonville District contacted Fort Marion Caretaker William F. Brown. He reminded Brown that the 1916-19 fort rehabilitation, because of budgetary restrictions, had only included those features most in need of attention. There was now a probability of securing an allotment for additional work, and Braxton was planning a visit to the site to ascertain priorities and costs.

If the project were funded, Braxton hoped to secure the services of Bud Deyo, who had been in charge in 1916, to supervise the undertaking. He accordingly wished Brown to contact Deyo and see if he were interested.⁶

Brown made the necessary arrangements, and two weeks later, on January 21, Braxton drove from Jacksonville to St. Augustine. After picking up Deyo, he motored down to Crescent Beach and on to Corbett's camp. They then crossed the Matanzas River in a small boat made available to them by Corbett.

4. Lemon to Chief Engineer, Aug. 8, 1922, NA, RG 79, Fort Matanzas, War Depart. Files.

5. Weeks to Black, Aug. 18, 1822, NA, RG 79, Fort Matanzas, War Dept. Files.

6. Braxton to Brown, Jan. 7, 1924, files CSMNM.

What they saw satisfied Braxton that, unless repairs were made at the "earliest practicable date," Fort Matanzas would suffer further deterioration. Upon returning to Jacksonville, he prepared and submitted a program calling for:

(a) Reconstruction of the south front. To accomplish this, "the broken pieces of the existing" wall would be taken down, the facing stones match-marked and the wall carefully reconstructed, employing as much of the historic fabric as feasible, and replacing in their original positions the facing stones. Braxton estimated that about 100 cubic yards of stonework will have to be taken down and a similar number of yards rebuilt, at a cost of \$2,000.

(b) It was desirable to rebuild the barbette platform in rear of the aforementioned wall. The cost of this work was placed at \$150.

(c) In the tower casemate, a small portion of the flooring in the upper tier should be reconstructed to "preserve the old form of construction," consisting of wooden beams. The interstices between these beams were filled with arch-shaped "concrete slabs, much after the manner used in the floor system of modern office buildings, wherein steel beams are employed and either hollow tile brick or reinforced concrete is used between the beams." Braxton proposed to rebuild the remainder of the floor of lumber to provide a platform on which visitors will stand. He estimated cost of this phase of the project at \$125.

(d) A small boat landing, to cost about \$100, should be built on Rattlesnake Island for the accommodation of visitors.

District Engineer Gilbert A. Youngberg, after reviewing Braxton's program, forwarded it to the Chief Engineer. If there were funds available for "preservation of historical monument," he recommended that \$2,375 be allotted to undertake the described repairs.⁷

The project received the blessing of Chief Engineer Beach, and the requested sum was allotted by Secretary of War Weeks from the appropriation for "Preservation and Repair of Fortifications" for Fiscal Year 1924.⁸

7. Brown to Braxton, Jan. 9, 1924 and Youngberg to Chief Engineer, Jan. 24, 1924, files CSMNM.

8. Collins to Chief Engineer, Feb. 27, 1924, files CSMNM. Robert L. Collins was the Army's Adjutant General.

2. Bud Deyo is Engaged

Consequently, on March 14, Assistant Engineer Braxton again contacted Bud Deyo. If agreeable, he was to take charge of the programmed repairs, undertaking them in the order as outlined. Custodian Brown was to coordinate the project, and assist Deyo in supply necessary materials.

Deyo was reminded that, when he undertook the 1916-17 repairs, certain tools had been furnished him from those belonging to Fort Marion. Brown had been alerted to again provide these or similar tools. Any tools which Brown could not supply, Deyo was to requisition from District Engineer Youngberg.

The work was to be undertaken as soon as Deyo could perfect arrangements and hire a sufficient number of workmen. Previous to his departure for Fort Matanzas, he was to submit to the District Engineer a list of the employees and their rates of pay.⁹

3. Deyo and His Men Begin Work

By April 1 Deyo had hired three men, each commanding a wage of \$6 per diem. On Sunday, March 30, a truck loaded with tools and materials was driven down to Corbett's. Then on Wednesday, the 2d, Deyo and his men left St. Augustine by boat for the site.¹⁰

4. Colonel Youngberg Makes a Suggestion

Work had been underway for nearly two weeks before Colonel Youngberg had an opportunity to visit the area. He was disappointed to see that dismantling of the wall was "progressing but slowly, due to the fact that the different pieces of stone were very closely united by the lime or cement used in the construction of the wall."

After returning to Jacksonville and discussing the subject with his staff, Colonel Youngberg suggested that by employing blasting powder, Deyo and his people could save time and labor. The powder, he believed, will "break up the blocks without causing any severe shock to the surrounding structure." It would be necessary, however, to have an explosives expert direct this phase of the project, provided Deyo and his crew did not possess this capability.¹¹

9. Braxton to Deyo, March 14, 1924, files CSMNM.

10. Brown to District Engineer, April 2, 1924, files CSMNM.

11. Braxton to Brown, April 18, 1924, files CSMNM.

Custodian Brown relayed this information to Deyo. After listening to what Brown had to say, Deyo replied that the "hardest part of the work has been completed," and he would not have to employ blasting powder. Although work had at first dragged, they were now making good progress. The east wall was down, and more than one-half the south wall. He planned to begin laying stone on Monday, April 28.¹²

5. The Project Reveals Important Construction Details

Deyo's people, upon excavating around the foundations, saw that the stone was laid "directly on the sand bed foundation." Between the outer and inner faces of the walls, "a grouting of lime plaster and small stone" had been placed by the Spanish. This was the fabric which and offered such resistance to removal. As the workmen disassembled the lower part of the walls, they found that the grout was not as hard, possibly because of "damp conditions at (this) lower level."

When the coquina flagstones were removed from the terreplein, the area beneath was seen to consist of sand, grouted with small stones and mortar. This disappointed Custodian Brown, because, motive a hollow sound, he had been of the opinion that they would "find a room under the south east corner of the parapet."¹³

Upon discussing Custodian Brown's report, Assistant Engineer Braxton told Colonel Youngberg that, he was reasonably certain, that under at least one of the forts walls will be found a hard cement, possibly limestone mortar." Colonel Youngberg accordingly wanted Deyo and his people to do sufficient excavating to verify whether there was such a foundation. If there were, it was to be used in rebuilding the wall.¹⁴

Custodian Brown was at the site on Tuesday, April 29. He saw that in the days since his last visit Deyo and his men had foraged ahead. By the time they knocked off for the day, the south and east walls will be down. Some hauling by wheelbarrows of "sand and small rock fill under (the) parapet" to provide ample room for the workmen, in relaying the stone, would be required. Already, much of this fill had been "hailed out and braces placed under large stones of (the) parapet to avoid cavein's." The under layer of this fill, Brown observed, was "a mixture of coquina gravel, with lime and shell mixture" underneath. The lower fill was principally marsh mud.¹⁵

12. Brown to District Engineer, April 24, 1924, files CSMNM.

13. Ibid.

14. Youngberg to Brown, April 28, 1924, files CSMNM.

15. Brown to District Engineer, April 29, 1924, files CSMNM.

Deyo, because of limited space at the site, objected to adding men to the payroll, as they will get in each other's way. Custodian Brown agreed, because, as he wrote Colonel Youngberg, Deyo seemingly had the project "well in hand with his regular crew of workman."¹⁶

On the morning of April 29, Brown sent down to Fort Matanzas a "small shipment of cement," along with other needed items. Arrangements had been made for additional shipments of cement, as required.¹⁷

6. The South and East Walls are Rebuilt, the Terreplein and Tower Roof Cleared and Resurfaced, etc.

On Saturday, May 3, 1st Lt. Ralph E. Cruse and Junior Engineer Clark of the District Office spent part of the day on Rattlesnake Island. They found the work progressing satisfactorily.

Upon returning to Jacksonville, they briefed Colonel Youngberg. Here thereupon wrote Custodian Brown, directing that Deyo give particular attention to securing a firm bond "between the old wall and the wall which is being rebuilt." It was desirable also that "some form of tamping, preferable by water," be made in "the file behind the wall before the flag stones are laid on the parade above." If practicable, this filling and tamping was to be done in courses as the wall was laid to prevent "a future settling of the flat stones above."

Although "historic restorations necessitated" careful and painstaking work, Colonel Youngberg cautioned that the projects must be completed before June 30, 1924, and "sufficient labor and material must be kept on the job to insure that this will be done." In calculating the time required to finish the project, Custodian Brown was to remember that "small odd jobs, such as grouting, replacing stones here and there, and the like," commanded considerable time, and that the high priority object--reconstructing the south front and rebuilding the barbette platform--must be completed in time to allow for needed miscellaneous repairs.¹⁸

By the last week of June, Deyo and his men had reconstructed the walls, "thoroughly embedding" the stones "in a high grade cement mortar." Unfortunately, in handling the stones, "the facings disintegrated to a certain extent, thus destroying, more or less, the appearance of age." Colonel Youngberg was hopeful that within a few years, these facings would weather, and be indistinguishable from the others.

16. Ibid.

17. Ibid.

18. Youngberg to Brown, May 6, 1924, files CSMNM.

The terreplein and tower roof were cleared of myrtle and spanish bayonet, and resurfaced with a Portland cement and coquina shell concrete.

The cast iron cannons had been "crudely mounted on the parapet walls with a view to simulating the original appearance" of the fort.¹⁹

7. Protecting the Foundations With an Oyster Shell Mattress

The cost of these projects for labor, materials, and inspection was \$km976.90, leaving an unexpended balance from the allotment of \$398.10. Colonel Youngberg determined to employ this sum to protect the foundations against the ebb and flow of the tide.

While at the site in early May, Lieutenant Cruse and Junior Engineer Clark had recommended that, to prevent the foundation being undermined and the washing away of the lower stones and grouting, a mattress of oyster shells be put down. In late June, Custodian Brown arranged with Eugene Johnson of nearby Summer Haven to purchase, deliver, and spread around the base of the fort 3,750 barrels of oyster shell, at a cost of 12 cents per barrel.²⁰

Johnson began delivering the shells on Saturday, August 2, and by the 9th he had landed and spread about 240 barrels. On August 11, in response to prodding by Custodian Brown, Johnson employing a power boat and lighter, upped his deliveries to 150 barrels, daily. By mid-October, Johnson had landed and placed around the foundation walls 3,825 barrels of oyster shells, for which he was paid \$450.

The oyster shells, Colonel Youngberg admitted in February 1925, did not "present a very satisfactory appearance." But, he trusted, they would settle in a year or two, "resulting in greater protection to the walls themselves and improving the appearance."²¹

The \$450 charged against the oyster shell project, exceeded the \$398.10 available by \$51.90. Custodian Brown assumed blame for this error, because he should have requested data on the amount allotted and still available before "placing a final obligation of funds."²²

19. Youngberg to Chief Engineer, Feb. 19, 1925, CSMNM.

20. Brown to District Engineer, June 30, 1923, files CSMNM.

21. Brown to District Engineer, Aug. 15 and Oct. 15, 1924; Youngberg to Chief Engineer, Feb. 19, 1925, files CSMNM.

22. Brown to District Engineer, Nov. 30, 1924, files CSMNM.

C. Fort Matanzas Becomes the Responsibility of the Quartermaster General

1. President Coolidge's October 15, 1924, Executive Order

On October 15, 1924, President Calvin Coolidge issued an order, under provision of the Act of June 8, 1906, authorizing the President to declare "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled" by the United States to be national monuments. In accordance with this authority, the declared Fort Matanzas, along with four other sites (Forts Wood, Marion and Pulaski, and Castle Pinckney) to be national monuments. Fort Matanzas National Monument was to include "one acre comprising within it the site of the old fortification which is situated on a marsh island south of the present channel of the Matanzas River in the southeast quarter of Section 14, Township 9 South, Range 30 East."²³

Then, on August 19, 1927, President Coolidge issued Executive Order 4704, transferring to the Department of Agriculture, as a bird refuge, those portions of the Fort Matanzas Military Reservation not set aside as a national monument by his October 15, 1924, proclamation.²⁴

2. The Quartermaster General Asks and Receives Answers to a Number of Questions

On January 23, 1925, Assistant Secretary of War Dwight F. Davis called Quartermaster General William H. Hart's attention to President Coolidge's proclamation of October 15, declaring Fort Matanzas a national monument. As the Department had no procedures for handling such structures, it had been determined to make them the responsibility of the Quartermaster Department. Fort Matanzas, along with other national monuments, was to be administered in the same manner as the national military parks.

Quartermaster General Hart was to prepare estimates for funding this operation, the item to be carried separately in the annual appropriations bill.²⁵

23. Executive Proclamation No. 1713, Oct. 15, 1924, NA, RG 79, NPS, Central Classified Files, 1933-49, Fort Matanzas.

24. Executive Order No. 4704, Aug. 10, 1927, NA, RG 79, NPS, Central Classified Files, 1933-49, Fort Matanzas.

25. Davis to Quartermaster General, Jan. 23, 1925, files CSMNM.

The Quartermaster General accordingly called on the Chief Engineer, who had been responsible for the site, for certain information believed necessary to meet this challenge. General Hart wished to know:

- (a) What is the present condition of the monument and grounds?
- (b) What was the number, size, and condition of the structure(s)?
- (c) How many people were needed for its maintenance, and what were their rates of pay?
- (d) What was the annual cost of supplies used or expended incident to its operation and maintenance?
- (e) Against what appropriation had expenses heretofore been charged?
- (f) What were the costs for Fiscal Year 1924 and for Fiscal Year 1925 to date?
- (g) What sum, if any, was included in the Fiscal Year 1926 appropriation?
- (h) What was the 1927 estimate?
- (i) Were there any rules and regulations governing visits to the monument?²⁶

District Engineer Youngberg replies for the Chief Engineer.

He noted:

- (a) The fort was in "fairly good" condition, while the grounds were "very limited and in their natural state."
- (b) The structure was of coquina and about 50 feet square. It was visited by a few tourists, who arrived by boat from St. Augustine or drove down the beach, walked across the island, and rowed across Matanzas River in a boat.
- (c) There was no permanent custodian, nor was one necessary. The site was supervised by the Fort Marion caretaker, who visited it from time-to-time.
- (d) No supplies were needed, except for occasional repairs. Among those required in the past had been Portland cement, coquina, building sand, and ordinary structural timbers.

26. Harbold to Chief Engineer, Feb. 19, 1925, file CSMNM. Maj. R.R. Harbold was an assistant to Quartermaster General Hart.

- (e) Heretofore, repairs had been made from funds appropriated for "Preservation and Repair of Fortifications."
- (f) In Fiscal Year 1924, \$2,375 had been spent on the fort. As yet, no Fiscal Year 1925 money had been obligated nor was any available.
- (g) No funds had been appropriated or allotted for Fiscal Year 1926.
- (h) No estimate for Fort Matanzas for Fiscal Year 1927 had been submitted.
- (i) No rules or regulations had been prepared for administration of Fort Matanzas.²⁷

3. The District Engineer Submits His Final Estimates

In mid-May 1925 the Jacksonville District Engineer Office prepared for the Quartermaster General, an estimate of the cost of needed work to place Fort Matanzas in first class condition. Called for were:

- (a) Repairs to new concrete roofs on both portions of the structure including weepers to drain the rain water through the walls, labor and materials..... \$ 36.00
 - (b) Substantial wooden stairways to afford access to portions of fort served by ladders..... \$ 21.00
 - (c) A hatch for opening through the upper portion of the fort, mounted on substantial hinges, equipped with G.I. hasp and staple..... \$ 12.00
 - (d) Cleaning all debris from cistern and mounting substantial hatch coaming and hatch..... \$ 18.00
 - (e) Reconstruction of coquina sentry box on bracket on southwest corner of fort similar to Fort Marion sentry box..... \$750.00
 - (f) Construction of stairway at north elevation of structure..... \$ 12.00
- Total..... \$849.00²⁸

27. Youngberg to Chief Engineer, March 11, 1925, files CSMNM. The long-time custodian of Forts Marion and Matanzas was William F. Brown, a son of -Sergt. George W. Brown. His current salary was \$900 per year. The cottage at Fort Marion, available for occupancy by the custodian, was occupied by his mother, to Sergeant Brown's widow.

28. Bullock to Chief Engineer, May 21, 1925, file CSMNM.

D. The Fort Becomes the Responsibility of the Quartermaster Department

1. L.L. Davis Becomes Superintendent and Oversees Several Minor Improvements and Repairs

On August 15, 1925, several months after the Quartermaster Department relived the Corps of Engineers of responsibility for Fort Matanzas, Caretaker Brown reported that immediate repairs were required to correct a situation resulting from improper drainage of the upper and lower terrepleins. This could be corrected by positioning a weep, similar to those placed at Fort Marion, behind the parapets. This could be accomplished, he estimated, for \$27.²⁹

On September 12 \$30 was allotted by Quartermaster General Hart to underwrite this project.³⁰

Caretaker Brown did not have an opportunity to supervise the expenditure of these funds. On December 31, 1925, he was relieved of his duties connected with the fort. His replacement was Leslie L. Davis, who was named Superintendent of Forts Marion and Matanzas National Monuments and St. Augustine National Cemetery, on January 1, 1926.

When he submitted the prerequisite quarterly report for the first quarter of calendar year 1926, Superintendent Davis noted that at Fort Matanzas ladders had been installed; weeps put in; weeds eradicated on the terreplein; and the "curtain walls repointed."³¹

2. The 1926-27 Reconstruction of the Sentry Box and Other Repairs

On May 3, 1926, the Quartermaster General approved a \$750 allotment, previously estimated, for reconstruction of the sentry box at the southwest corner of the fort. Although this structure served no useful purpose, its reconstruction was recommended in the interest of history. The bracket of the original structure was extant and could guide the workmen.³²

29. Brown to Comdg. Officer, QMID, Jeffersonville, Aug. 15, 1925, NA, RG 79, Fort Matanzas, War Dept. Files.

30. Bailey to Brown, Oct. 5, 1925, NA, RG 79, Fort Matanzas, War Dept. Files, J.R. Bailey was commanding officer of the Jeffersonville, Indiana, Quartermaster Depot.

31. Quarterly Report for the period ending March 31, 1926, NA, RG 79, Fort Matanzas, War Dept. Files.

32. Bailey to Quartermaster General, May 3, 1926, NA, RG 79, Fort Matanzas, War Dept. Files.

Upon reviewing the situation and discussing the subject with Curator W.J. Harris of the St. Augustine Historical Society, Superintendent Davis proposed that the sentry box be reconstructed of "brick covered with a cement plaster coat broadcasted with coquina gravel-shape and finish like those on Fort Marion." Use of such brick would eliminate the expense of forms for casting or expensive quarrying. Davis admitted that this would not correspond with the historic fabric (coquina), but would "compare favorably with coquina concrete cast in forms." The cost, he estimated, at between \$125 and \$150.

The remainder of the allotment could then be employed for "filling in and cementing terrepleins," thus improving drainage and protecting the parapets. Other work programmed included restoration of the fireplace and some interior pointing.³³

The Quartermaster General, on approving the scope of work as outlined by Superintendent Davis, urged that the sentry box be rebuilt under supervision of an officer or competent employee of the Jacksonville Engineer District. Instead, it was decided to hire an expert "coquina worker" to reconstruct the sentry box.

By the end of the first week in December, materials had been stockpiled, and Curator Harris of the St. Augustine Historical Society telegraphed the Jeffersonville Quartermaster Depot that reconstruction of the sentry tower would be commenced within a week. Whereupon, the depot quartermaster recommended that an officer from the Jacksonville Engineer District be asked to make an inspection of the work and provide necessary supervision.³⁴

Assistant Engineer M.A. Hockman of the Jacksonville District accordingly visited Rattlesnake Island. By December 31, 1926, he reported that workmen had rebuilt the sentry box, and had covered the 1st and 2d tiers of the terreplein with four inches of cement and sand, mixed at a 1 to 3 ratio. The "lower portion of the fort was also floored with materials on hand."³⁵

33. Davis to Comdg. Officer, OMID, Jeffersonville, July 17, 1926, NA, RG 79, Fort Matanzas, War Dept. Files.

34. Van Duyne to Quartermaster General, Dec. 9, 1926, files CSMNM. Col. F.W. Van Duyne was in charge of the Jeffersonville Quartermaster Depot.

35. M.A. Hockman to Quartermaster General, Jan. 14, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

On June 27, 1927, Superintendent Davis reminded the commanding officer of the Jeffersonville Depot that the 1927 allotment had been expended before all necessary projects were completed. Sixty dollars were needed to raise the dome of the sentry box to its proper height.³⁶

Davis was authorized to proceed to completion of the sentry box, and such other repairs as could be funded with the \$320 allotted by the Department for Fiscal Year 1928.³⁷

Consequently, in August and September the sentry box was completed and the scrap repointed.³⁸

3. The 1927 Riprapping and Tower Tie-rods

In late June 1927, Superintendent Davis alerted the commanding officer of the Jeffersonville Quartermaster Depot to a dangerous erosion problem. Flood tides, during recent months, had undermined the ground at the fort's southeast corner. To check this erosion, Davis called for driving 100 piles, at \$20 each.³⁹

When the Depot Quartermaster responded, he noted there were no funds available for piling, nor had Davis prepared a detailed proposal to cope with this treat. Such a plan should be formulated by the Corps of Engineers.⁴⁰

Upon being apprised of this situation, Quartermaster General B. Franklin Cheatham contacted Chief Engineer Henry Taylor, and asked him to have one of his officers study the problem. General Taylor was agreeable, and referred the subject to the District Engineer of the Jacksonville District.⁴¹

36. Davis to Comdg. Officer, QMID, Jeffersonville, June 27, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

37. Hockman to Quartermaster General, July 12, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

38. Maslin to Davis, Oct. 20, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

39. Davis to Comdg. Officer, QMID, Jeffersonville, June 27, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

40. Hockman to Quartermaster General, July 12 and Aug. 6, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

41. Hampton to Chief Engineer, Sept. 15, 1927, files CSMNM. K.J. Hampton was an assistant to Quartermaster General Cheatham. General Cheatham had replaced General Hart as Quartermaster General in 1926, while General Taylor had relieved General Beach as Chief Engineer in 1924.

1st Lt. Eugene M. Coffey, of the Jacksonville office accordingly visited Rattlesnake Island. He found that there was seemingly "no danger of the tide's undermining the southeast part of the fort." High tide mark was about 12 feet from the subject corner, and there was no evidence of any tidal scour. The oyster shell mat, positioned 36 months before, was in place except for one slight wash. This erosion was not serious, and did not compromised the fort's safety. While there was little probability of damage, the possibility must be considered. This could be offset by placing a conquina apron around the fort's southeast corner to extend to depth below mean low water. Such an apron would cost about \$150 and contain about 30 yards of rock.

Lieutenant Coffey also saw that the northern elevation of the fort was "noticeably out of plumb" while there was a crack half an inch to one-inch wide and about six feet long in the intrados near the crown of the arched roof." These indicated to the lieutenant that the subject wall was settling. The tower, he observed, was tied together on its east-west axis by tie-rods. He recommended that a similar arrangement be introduced, at a cost of \$100, into its north-south axis.⁴²

On October 20 the Depot Quartermaster, having reviewed Lieutenant Coffey's report, directed Davis to "proceed to have the repairs near the wall of Fort Matanzas made as suggested by the Engineer Corps." They were to be made in "a first-class substantial manner." For this purpose, a special \$250 allotment had been made. If this were insufficient, he was authorized to utilize any portion that remained unobligated from the Fiscal Year 1928 \$300 maintenance allotment.⁴³

Superintendent Davis found that coquina riprap was prohibitively expensive, the cost of quarrying being \$2.50 per square yard. He therefore made arrangements for purchase of a "lot of curb stones 4x12x48." These had been cast of concrete during the real estate boom, and the bust made the owner willing to sell them for \$150 per yard. Their transportation to the site cost \$38, and the positioning of 30 square yards to shield the fort's southeast corner \$116.

The tower tie-rods were purchased from the Acme Machine Works for \$40.34, transported to Rattlesnake Island from St. Augustine by George W. Corbett, along with the curbstones, and positioned by day laborers hired by Superintendent Davis.⁴⁴

42. Coffey to Chief Engineer, Oct. 6, 1927, files CSMNM.

43. Maslin to Davis, Oct. 20, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

44. Davis to Comdg. Officer, QMJD, Jeffersonville, Nov. 3 and 7, 1927; Davis to Acme, Nov. 26, 1927; and Davis to Corbett, Nov. 20, 1927, NA, RG 79, Fort Matanzas, War Dept. Files.

4. The 1928 Hurricane

The September 1928 hurricane did no damage to the fort beyond washing away the 1924 oyster shell revetment, from the southeast approach. Surging waves dislodged the shells and scoured a channel much nearer the shore. Concrete blocks, positioned the previous November, were "badly jumbled about and sand washed out from under them"⁴⁵

E. The St. Augustine Historical Society and Institute of Science Manages the Site

1. The 1928 Agreement

Through provisions of an agreement entered into on April 16, 1928, between the Assistant Secretary of War and the St. Augustine Historical Society and Institute of Science, the Society became caretaker for Forts Marion and Matanzas National Monuments. On its part, the Society agreed to maintain and care for the National Monument, as well as Fort Marion, to "an extent involving the outlay of not over \$3,000 per year." This agreement was to take effect on July 1.⁴⁶

2. The Society Increases its Responsibilities

On December 28, 1928, Superintendent Davis recommended that the surplus cement at Fort Marion be employed at Fort Matanzas for either "making a small landing place for boats or for additional ramping at (the) W.E. corner," where the September hurricane had washed away most of the oyster shells.⁴⁷

Lt. Col. Norris Stayton of the Jeffersonville Depot was agreeable to Davis employing the cement and purchasing additional materials for repair of the "ramp." In addition, he was authorized to construct a small landing place for boats.⁴⁸

But before this work could be undertaken, Davis was relieved of his responsibilities as caretaker for Forts Matanzas and Marion and the position abolished. Hereinafter, these properties were to be administered by the commanding officer of the Jeffersonville,

45. Quarterly Report for Fort Matanzas for the period ending Sept. 30, 1928, NA, RG 79, Fort Matanzas, War Dept. Files.

46. License to St. Augustine Historical Society and Institute of Science, April 16, 1928, NA, RG 79, Fort Marion, War Dept. Files.

47. Davis to Comdg. Officer, QMID, Jeffersonville, Dec. 23, 1928, NA, RG 79, Fort Matanzas War Dept. Files.

48. Stayton to Davis, Jan. 20, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

Indiana, Quartermaster Depot, through the St. Augustine Historical Society.⁴⁹

3. The 1929 Reconstruction of the Sentry Box

A mid-June 1929 inspection by Curator Harris of the St. Augustine Historical Society revealed that the wall in the vicinity of the reconstructed sentry box was failing. Relaying this news to the Depot Quartermaster, he suggested that the box be removed to "prevent further damage, or that the recommendation of an engineer be obtained."

When he referred this problem to the Chief Engineer, Quartermaster General Cheatham noted that some repairs had been made to the structure several years ago on recommendation of the District Engineer. If practicable, it was hoped that the subject officer would make a survey of Fort Matanzas, and advise the Quartermaster General of the measures to be taken to repair it and the cost thereof.⁵⁰

Consequently, on August 8, an officer from the Jacksonville Engineer District drove to St. Augustine. There he contacted Maj. B.M. Atkinson, U.S. Army, Ret., a director of the Historical Society, and the two men crossed from Summer Haven to Rattlesnake Island in a launch.

Upon examining Fort Matanzas, they saw that the sentry box had been recently rebuilt, and the crack in the wall at its base predated that project, because "the crack at the base or bracket is considerable wider than that now forming at the junction of the tower and the wall of the fort above the base." It would be impossible to pull the box back into place.

In reconstructing the sentry box, it had been built-up of "concrete, or of stone entirely covered with cement." This did not blend with the adjacent coquina and detracted from the structure's appearance.

An inspection of the exterior walls of the fort divulged that much of the mortar was loose and falling out leaving "some large cracks or holes." An effort had been made "to fill" in some of the holes, but instead of using coquina, "pieces of brick and other materials have been wedged in, "further compromising the looks.

49. Valliant to Davis, May 13, 1929, Status Report, NA, RG 79, Fort Marion, War Dept. Files.

50. Harris to Chief Engineer, June 18, 1929, files CSMNM. Maj. John T. Harris was on duty in the office of the Quartermaster General.

To control the outward bulging of the north tower wall, tie-rods had been run through the tower, on a north-south axis. Some of the rods extended through the full length of the tower, while others were seemingly anchored on the inside. Several of these rods were without bearing plates or nuts on the north face, and accordingly served no useful purpose.

Returning to the sentry box, the Engineer recommended that it be dismantled and rebuilt. Its lower portion, instituting a bracket upon which the box was anchored, was apparently part of the original fabric, since it consisted of cylindrically cut coquina. In dismantling the box, this stone was to be carefully removed. The face of the wall would then be cleaned and the bracket rebuilt. Next, the sentry box was to be reconstructed upon the bracket, employing coquina cut to harmonize with the fort's scrap. An iron band should be positioned around the dock, near its base, just above the "top cylindrical stone of the original bracket." This band to be imbedded and anchored in the wall of the fort, to prevent the box from being again pulled away from the scrap. In lieu of the band, resort could be made to a cantilever beam or beams, extending under the box, and carried some distance into the walls of the fort.

It was estimated that the expense of tearing down the sentry box, and preserving the stones of the bracket would be \$50, while it would cost \$200 to rebuild the structure of coquina blocks, and imbedding a band in the walls.

To preserve the Fort Matanzas walls and to maintain the historic fabric, it was recommended that the "bricks and other unsightly material" be removed from the interstices. They should be replaced with pieces of coquina, after which the joints were to be repointed, with cement mixed with pulverized coquina "to give it the appearance of the original Fort." The cost of this project was placed at \$158.

To prevent a farther bulging of the north wall of the tower, plates and nuts should be placed upon the tie-rods extending through the walls.

The water next to the shore was so shallow that it was impossible to land with anything larger than a rowboat. If the fort were to be maintained by the United States as a national monument, it was recommended that a pier, extending some 30 to 40 feet out into the Matanzas River, near the north face of the fort be constructed. Cost of such a pier, if built of creosoted timber, was estimated at \$150.

Before returning to Jacksonville, the officer took four photographs of the fort to illustrate his report. Photograph No. 1 was a view of the fort from the southeast/ No. 2 was of the sentry box; No. 3 was of the entrance to the box from the fort; and No. 4 was a closeup view of the crack at the base of the box.⁵¹

Upon reviewing the District Engineer's report, Colonel Stayton notified Curator Harris that the item of greatest urgency was the dismantling and reconstruction of the sentry box. Lower priority would be given to securing or anchoring the tie-rods, replacement of "brick and other unsightly materials with pieces of coquina," and re-pointing the structure with coquina cement.

Colonel Stayton reminded Harris that reconstruction of the sentry box "will take very careful work by a skillful workman under the direction of a competent superintendent or engineer." It was suggested that this project be accomplished by contracting with local builders. If no suitable proposals were received, the project could be undertaken by the Society through purchase of materials and hire of day labor to work under supervision of a competent engineer. Proposals were also to be secured simultaneously for removal of the unsightly fabric, repointing the structure, and adjusting the tie-rods.⁵²

Four weeks later, on October 20, Maj. Rollin L. Tilton of the Inspector-General's Department, accompanied by Superintendent Davis of the St. Augustine National Cemetery, traveled to Fort Matanzas. What they saw agreed in "all respects with the findings and recommendations of District Engineer Frazier. Davis explained to Major Tilton that he had supervised reconstruction of the sentry box from a "design found in an old print of the fort," and that he had positioned the tie-rods through the north and south walls.

Major Tilton urged that the repairs suggested by the District Engineer be undertaken "under the supervision, if practicable, of an officer or competent employee from" that office.⁵³

Meanwhile, Curator Harris of the St. Augustine Historical Society and Institute of Science had notified Colonel Stayton that the Society had an experienced coquina mason, who was capable of accurately

51. Fraizer to Chief Engineer, Aug. 26, 1929, files CSMNM.

52. Stayton to Harris, Sept. 25, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

53. Back to Inspector General, Nov. 6, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

reconstructing the sentry box, while Quartermaster General Cheatham had allotted \$400 to underwrite the project.⁵⁴

By mid-November Curator Harris had contracted and secured a proposal from Carmello Pacetti for dismantling the sentry box, and "executive another one just like the small towers on Fort Marion." The stone would be furnished by the Historical Society, and the base of the box was to be reinforced with two or three railroad rails. Pacetti's price broke down.

Dra age on stone from St. Augustine to Rattlesnake	
Island.....	\$ 50.
Removal of sentry-box.....	\$ 50.
Materials (timber, cement, etc.).....	\$ 50.
Labor.....	<u>\$200.</u>
Total	\$350. ⁵⁵

Relaying this information to Colonel Stayton, Curator Harris recommended that Pacetti's proposal be accepted, because: (a) he was the only local mason who understood "facing coquina," the "tower having to be rounded both on the outside and inside"; and (b) Superintendent Davis had informed him that in 1927 the bid for reconstructing the sentry-box was \$650.

Plans called for "resting" the reconstructed sentry box on "three railroad iron rains, buried so they do not show," as this would take the weight off the "circular foundation, which is original (sic) and must be preserved" No iron would be exposed to mar the beauty of the sentry tower.⁵⁶

Colonel Stayton, after reviewing the correspondence, approved the project as outlined, and directed Curator Harris to "proceed to have the work done in accordance with the plan and estimate submitted."⁵⁷

54. Harris to Comdg. Officer, QMID, Jeffersonville Depot, Sept. 13 and Oct. 1, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

55. Estimate for Reconstruction of Sentry Box, Nov. 16, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

56. Harris to Comdg. Officer, QMID, Jeffersonville, Nov. 20, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

57. Stayton to Harris, Nov. 23, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

Pacetti and his men, on receiving the go ahead, commenced work. By mid-December Curator Harris notified Colonel Stayton that the base of the sentry box was nearly completed, having been secured to the fort by railroad irons. Coquina was being cut, and Pacetti had reported that two or three days would be required to reconstruct the box once the stone had been shaped. Weather permitting, he forecast, its completion by the 27th.⁵⁸

Concurrently, Quartermaster General Cheatham, not knowing that the project was nearly finished, requested that the final inspection be made by the District Engineer. Upon being notified by this, Curator Harris on Saturday, December 28, telephoned Colonel Frazier. He asked for an immediate inspection, because he anticipated that the sentry box would be completed on the 30th.

The inspection was made on the designated date by one of Colonel Frazier's staff. He saw that the old sentry box had been dismantled and rebuilt, "being patterned after similar towers at Fort Marion." To support it and prevent it from again pulling away from the fort's scrap

strips of iron 5/8" by 5" by 6 feet in length were placed in or under each of the three circular layers from the pedestal on which the tower rests, these strips of iron extending under these layers and into the masonry work of the fort foundation.

Under the circular wall of the box, itself, railroad irons were placed on each side curved to the shape of the wall, and extending back under the coping wall forming the approach to the sentry box from the fort's terreplein.

As built, he observed, the small tower conformed with the construction of the fort, and after "the action of the atmosphere and storms had removed the new appearance," it would blend with the original fabric. As now supported, the engineer believed, the box would not pull loose from the fort.

Before returning to Jacksonville, he took five photographs of the reconstructed sentry box to document the mode of construction.⁵⁹

58. Harris to Comdg. Officer, QMID, Jeffersonville, Dec. 14, 1929, NA, RG 79, Fort Matanzas, War Dept. Files.

59. Frazier to Chief Engineer, Jan. 11, 1930, files CSMNM.

Copies of these photographs are included in this report.

4. Three Tie-rods are Secured

On January 28, 1930, Curator Harris reported that "stay rods had been completed under instruction" of the District Engineer. This had proved to be more of an undertaking than planned, as a scaffold had to be erected just to secure "the ends of three rods where nuts had been left off by former workmen."⁶⁰

5. Captain Spann's April 1930 Inspection

Capt. George F. Spann inspected the fort in the second week of April. He pronounced the recently reconstructed sentry tower to be an excellent piece of workmanship. After it had aged, it would harmonize with the original fabric.

The superior slope of the parapet walls, however, were in need of pieces of coquina in places and pointing with a mixture of coquina ... and cement at other points." On the second tier, he noted, a "small retaining wall about 6" thick and 8' long and 6' high with L cut-out reducing height to about 30" ... was seemingly of recent origin."

The fort's north front seemed to be poorly anchored. Without a scaffolding, it was impossible for Captain Spann to determine if the tie-rods had been provided with suitable bearing plates and washers. The bearing plates, if positioned, were invisible.⁶¹

Commenting on Captain Spann's report, Curator Harris noted that the coquina wall inside the fort immediately in front of the magazine, had been reconstructed by the Corps of Engineers in their 1916-17 rehabilitation.

The Society, he promised, would continue its maintenance program, involving cementing and repointing and "do everything to put" the fort in "proper shape."⁶²

60. Harris to Comdg. Officer, QMID, Jeffersonville, Jan. 23, 1930, NA, RG 79, Fort Matanzas, War Dept. Files.

61. Inspection Report, April 10-11, 1930, NA, RG 79, Fort Matanzas, War Dept Files.

62. Colee to Spann, May 20, 1930, NA, RG 79, NPS Central Classified File, 1933-49, Fort Matanzas. Harold Colee was President of the St. Augustine Historical Society and Institute of Science.

6. The War Department Ceases Spending funds for the Maintenance of the Site

On February 21, 1930, Depot Quartermaster Van Duyne had notified the Department that projected projects at the fort included "stone replacement of material and pointing of the walls ... also the building of a small pier for boat landing." The estimate cost of this work was \$300.⁶³

Captain Spann, however, questioned whether the limited visitation justified an expenditure for construction of the pier, and it was dropped from the program.⁶⁴

During the next several years, with the Nation caught in throes of a world-wide depression, the War Department found its appropriations slashed to the bone. Retrenchment was the order of the day, and the Quartermaster General had no money to spend for maintenance or improvements at Fort Matanzas National Monument. The only expenditures made at the site during the 36 months ending June 30, 1933, were by the St. Augustine Historical Society and Institute of Science. At periodic intervals during these years, the Society employed a man to police the fort and grounds. In the fourth quarter of 1932 he also painted the Matanzas cannons.⁶⁵

F. The National Park Service Takes Charge

On March 4, 1933, Franklin D. Roosevelt was inaugurated as 32d President. He named as his Secretary of the Interior forceful conservationist Harold L. Ickes. The new Secretary and Director of the National Park Service Horace Albright on June 10, 1933, prevailed on the President to issue an Executive Order making the National Park Service of the Department of the Interior responsible for administration of "all public buldings, reservations, national parks, national monument, and national cemeteries." This transfer and consolidation of functions was to include the national cemeteries and parks within the continental limits of the United States for which the War Department was responsible. By Executive Order of July 28, President Roosevelt enumerated the War Department Properties that were to be transferred. Among these was Fort Matanzas National Monument.

63. Van Duyne to Quartermaster General, Feb. 21, 1930, NA, RG 79, NPS Central Classified File, 1933-49.

64. Hill to Quartermaster General, Aug. 8, 1930 NA, RG 79, NPS Central Classified Feb. 1944-49. Maj. James R. Hill now commanded the Jeffersonville Quartermaster Depot.

65. Quarterly Reports for 1930 through June 30, 1933, NA, RG 79, Central Classified File, 1933-49.

National Park Service personnel in the autumn of 1933 visited the site, and prepared a comprehensive program for rehabilitation of the fort and improvements to the site. Service personnel, on their first field inspection of this area, found the walls of the nearly 200-year-old structure "to be in fair condition, but otherwise everything was in a sad state of repair." The only access to Rattlesnake Island was by boat and there was no wharf to facilitate visits, while there was no caretaker. Since 1928, the St. Augustine Historical Society, which had managed Fort Marion under a special use permit from the Army, had been in the habit of providing occasional maintenance and some repairs to the structure.

The Park Service, to correct this situation, proposed to spend \$30,000 for repairs and improvements to the site. Of this money, \$5,000 was programmed for construction of a wharf; \$10,000 for construction of an office building, recreation house, comfort station, and water and sewer system; \$5,000 for construction of a caretaker's residence; \$5,000 for development and improvement of grounds; and \$5,000 for repairs to the fort.

To justify the final expenditure, it was reiterated that, although the walls of the fort were in "fair condition," all rooms required "renovating and restoring to a condition which obtained when the Fort was in use. Doors, floors, and shutters should be replaced." Most of these were missing or were in such condition as to make the structure unsafe for visitation. The stairway must be built to enable visitors to enter the tower.⁶⁶

66. Canamerer to Ickes, Dec. 18, 1933, NA, RG 79, Central Classified File, 1933-49, Fort Matanzas. Arno B. Canamerer had replaced Horace Albright as Director of the National Park Service on August 10, 1933.

Subsection E:
NATIONAL PARK SERVICE PERIOD, 1933-PRESENT

by
John C. Paige

Denver Service Center
Denver, Colorado
October 1978

FORT MATANZAS THE NATIONAL PARK SERVICE PERIOD 1933-PRESENT

"You are advised that in compliance with Executive Order No. 6166, June 10, 1933, jurisdiction over Fort Marion and Fort Matanzas is being transferred to the Department of the Interior effective August 10, 1933." In this terse statement, the Saint Augustine Historical Society and Institute of Science (S.A.H.S.) the caretaker organization of Fort Matanzas for over eighteen years, was notified by the United States War Department of the administrative transfer of these properties to the National Park Service (N.P.S.). This began a period of dual operations at Fort Matanzas National Monument and Fort Marion National Monument by both organizations which was not ended until July 1, 1935.¹

The first attempt to make some order of this situation came on December 12, 1933, when Secretary of Interior, Harold Ickes, designated William J. Harris of the S.A.H.S. as "Custodian of Fort Matanzas and Fort Marion" for twelve dollars a year. In January of 1934, the relationship of the two organizations was further clarified when Verne Chatelain, Chief of the Historical Division of the Department of the Interior, wrote to inform Custodian Harris that he would be under the orders of Herbert Kahler, the Acting Superintendent of the two national monuments. A formalization of this relationship came on July 1, 1934, when the lease between the S.A.H.S. and the army ended, and a new one was signed between the Society and the Department of the Interior. This lease was to last for one year with the Society managing the daily operations of the two national monuments under the watchful supervision of the N.P.S. The director of the latter agency reserved the right to terminate the agreement". . . at any time upon thirty days written notice to the lessee." Upon notification of termination, the S.A.H.S. would vacate the historical sites and remove any of its property within thirty days.²

1. Noble to Harris, August 7, 1933, NA, RG 79. NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Cammerer to Director National Park Service, December 29, 1933, NA, RG 79, NPS Central Classified File, 1933-49. Fort Matanzas National Monument.

2. Holmes to-Randolph, January 10, 1934, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Chatelain to Harris, January 16, 1934, NA, RG 79, NPS Central Classified File, 1933-49, Fort Matanzas National Monument; Durnham to Demaray, July 18, 1934, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Lease between Department of Interior and St. Augustine Historical Society and Institute of Science, July 1, 1934, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument.

Fort Matanzas was not named in the lease agreement, but became jointly administered by the N.P.S. and S.A.H.S. Harris left St. Augustine during the summer of 1934 for health reasons and Hebert Kahler acted as superintendent and custodian for the two national monuments. Harris returned in the fall to resume his duties as Custodian, but by this time, Kahler wanted the dual administration of the national monuments to end, with the N.P.S. taking over complete control of both forts.³

Kahler's proposition had been under discussion at the upper echelons of the N.P.S. for several months when rumors of the impending termination of the S.A.H.S. lease reached Congressman William J. Sears of Florida. Sears wrote to the N.P.S. that for more than eighteen years the S.A.H.S. operated Fort Marion in a competent and professional manner and he saw no need for the N.P.S. to take over operations of the fort. His concern was that:

At the present time and for a number of years passed, Fort Marion has been practically maintained, all minor repairs taken care of and all the grounds taken care of by the Historical Society, at little or no expense to the National Park Service. Should the Fort be taken over by the National Park Service it would simply be an additional burden to the Government and I believe that you will agree with me unless there is some substantial objection to the manner in which the Society has carried on its operations of the Fort, that it is certainly to the advantage of the Government, that the custody and management of Fort Marion remain with the Society.⁴

In reply, acting director of the N.P.S., Arthur Demaray wrote:

We have given this problem, as well as that of Fort Matanzas National Monument, a good deal of study in the past few months, and without seeking to minimize the work done by the Saint Augustine Historical Society, I feel that it is a mistake to continue the operation of this place under a private or semi-public association.

3. Kahler to Cammerer, June 5, 1934, NA RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Harris to Chatelain, October 5, 1934, NA. RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Kahler to Chaterlain, December 18, 1934, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument.

4. Sears to Demaray, January 23, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument.

Further on in the same letter, Demaray added:

In this connection, after a careful survey, this Service was able to secure a Public Works allotment affecting particularly Fort Matanzas. Extensive developments are being made there, including the acquisition of further lands, all with the idea of making this monument a more effective instrument in the national historical-education system.

Demaray then ended the letter by commenting that the national interest would best be served by federal administration of both Fort Marion and Fort Matanzas.⁵

Sears, upon receiving this reply, expresses his regret in the intransigent position the N.P.S. had taken on the matter and sent a copy of the letter to S.A.H.S. At this juncture in the dispute, Acting Superintendent Kahler unveiled a plan to the local St. Augustine newspaper by which the N.P.S. would take over full operation of the two national monuments on July 1, 1935. Kahler pointed out: "The PWA project at Fort Matanzas is more or less contingent upon the operation of Fort Marion by the National Park Service, since it was planned to operate both monuments as a unit."⁶

David R. Dunham, President of S.A.H.S., reacted to this by writing to Acting Director Demaray asking for clarification of the N.P.S. position in this matter. At the same time, S.A.H.S. launched a program of soliciting public support for their continuing operation of the two historic sites. This program consisted of S.A.H.S. members addressing the various civic clubs in town and asking for each organization to pass a resolution supporting the work of the Society. Copies of this resolution would then be sent the Florida congressional delegation. The representatives argued that the take over by the N.P.S. of the two national monuments would represent a financial loss to the St. Augustine community. The reasoning for this was in the past, the S.A.H.S. supported a variety of local charitable causes with the revenue gained from charging admission to Fort Marion and once this funding source was eliminated the Society could no longer support these charitable activities. It was further argued that the S.A.H.S. had invested over twenty years of work on the two monuments and a great amount of money including a recent expenditure of \$370 dollars for rebuilding work at Fort Matanzas.

5. Demaray to Sears, January 25, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument.

6. Sears to Demaray, February 1, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Dunham to Demaray, February 20, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument.

These arguments persuaded the St. Augustine and St. Johns County Chamber of Commerce, Professional and Business Men's Association of St. Augustine, Exchange Club of St. Augustine, St. Augustine Arts Club, Federated Garden Clubs of St. Augustine, St. Augustine Tourist Club and Rotary Club of Saint Augustine to pass identical resolutions supporting the continuation of the S.A.H.S. lease.⁷

Opposed to this point of view were the American Legion and Veterans of Foreign Wars locals of St. Augustine which passed resolutions supporting the N.P.S. efforts to take over complete control of the monuments. The City Commissioner of St. Augustine appointed a special committee to investigate the question of whether or not the city should support the S.A.H.S. in its efforts to hold on to the national monuments. The committee reported their findings to the full city commission which then voted four to one to support the N.P.S. efforts to become the sole administrator for the two forts.⁸ These victories prompted Acting Superintendent Kahler to write to Acting Park Service Director Demaray that: "Mr. Dunham (President of the S.A.H.S.) is making a desperate attempt to retain this very lucrative concession and no doubt will fight to the very end, however, the public is losing interest in the question and I think all accusations can be ignored."⁹

The S.A.H.S. continued its efforts, however, and was able to elicit support from Florida congressional delegates including; Senator Duncan Fletcher, Senator Park Trammell, Representative Robert Gree, Representative James Wilcox and Representative William Sears. These congressmen

7. Dunham to Demaray, February 20, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; St. Augustine Chamber of Commerce to Park Trammell, March 26, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument, Mr. Park Trammell was a United States Congressman from Florida and he referred the letter to Harold Ickes, the Secretary of the Interior, for further action. Ickes replied back that he fully supported the Park Service and its efforts to take over the administration of Castillo de San Marcos National Monument.

8. Fraser to Cammerer, March 18, 1935, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument; Cammerer to Sears, March 29, 1935, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument.

9. Kahler to Demarsay, March 7, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument.

wrote either the Secretary of the Interior or the Director of the National Park Service asking that the administration of the two national monuments remain with S.A.H.S. But these efforts were of no avail as on June, 1935, N.P.S. Director Arno Cammerer notified S.A.H.S. to vacate the premises of the two forts by July 1, 1935, and they complied with this request.¹⁰

During the brief period of dual administration the S.A.H.S. undertook little construction or maintenance work at Fort Matanzas. In 1933, a tourist oriented publication described the fort in the following manner:

It consists of a square of solid masonry, made of coquina blocks about 12 inches by 19 inches, 49 feet square at the base, 16 feet high to the top of the parapet which surround three of its sides. From this is a tower 17 1/2 feet high and extends the entire length of the northwest side, the top being 33 1/2 feet from ground, and contains two rooms one above the other, the lower on a level with the terreplein, with a door opening on it.¹¹

At this time, the fort entrance stairway was on the south side of the fort's terreplein with a small wooden gate placed at the top of the stairway. The only recorded work done by the S.A.H.S. was painting the two guns at the Fort Matanzas as Custodian W. J. Harris found the fort in good condition and not needing additional work.¹²

10. Wilcox to Cammerer, March 29, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Green to Ickes, March 29, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Demarsay to Fletcher, March 27, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Cammerer to Dunham, June 7, 1935, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; Dunham to Cammerer, June 18, 1935, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument.

11. History of St. Augustine Under Three Flags (St. Augustine: W. J. Harris Co. Inc.

12. "Quarterly Reports for Fort Matanzas for 1933 through June 1935", NA, RG 79, Central Classified File, 1933-49, Fort Matanzas National Monument.

However, Acting Superintendent Kahler did find Matanzas in need of repairs and in early 1934, he". . . removed the outside ladder which was badly rotted and endangered the lives of visitors. It was also an unsightly thing which detracted from the appearance of the fort." Kahler suggested the following action be taken in regard to the structure:

The terreplein and roof should be cemented over again to prevent the growth of grass and trees. A covering should be placed over the large opening in the roof. More substantial steps should be constructed leading to the terreplein. Some means will have to be devised to prevent the water from undermining the structure. Neighbors informed me that the fort has been struck repeatedly by lightning.¹³

Kahler in July 1934 then placed a covering over the roof opening at the fort to prevent further deterioration of the interior stair and advised that visitors should not be allowed on the tower roof as one of the walls appeared to be unsafe. He also found that weeds were growing quickly on the roof and breaking up the cement coating.¹⁴

To address the problems at Fort Matanzas, the N.P.S. began making plans for restorative work in the fall of 1934. Thor Borresen, a historical technician, came to inspect the two national monuments and told Acting Superintendent Kahler:

At Ft. Matanzas he (Borresen) suggests hand hewn timbers and boards for the upper floor which no doubt is more in keeping with the original plan. The ground floor was apparently packed earth. Such a floor would not however, prove very serviceable with large crowds of tourists and it was suggested to make the floor of coquina shell with cement. Mr. Borresen suggests restoring the doors, windows and the fireplace.¹⁵

13. Kahler to Chatelain, March 19, 1934, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

14. Kahler to Chatelain, July 10, NA RG 79, NPS Central Classified File, Fort Matanzas National Monument.

15. Kahler to Chatelain, October 16, 1934, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

In addition to these recommendations, Kahler requested that serious thought be given to reconstructing an outer stairway and balcony in Spanish period style.¹⁶

In conjunction with the planned restoration, the Historical American Building Survey (H.A.B.S.) sent a team to St. Augustine to record Fort Marion, the City Gate, Fort Matanzas and a few other historic buildings in St. Augustine. The H.A.B.S. drawings of Fort Matanzas shows a ladder going from the fort terreplein to the tower roof. On the inside of the tower, there is a wooden ladder going from the ground floor to the second floor and another wooden ladder going to the roof from the second floor. The second floor is shown as rough one-inch thick boards. The exterior plan of the fort shows embrasures on the east and west side of the structure with an opening in the south wall as an access point for the fort. The H.A.B.S. team found the oyster shells at the southeast corner of the fort were being washed away by the river currents and in the fort, they discovered stones falling out of the arch indicating failure of the vault. Thus at the end of 1934, Fort Matanzas was in need of many repairs before it could be opened for visitor use.¹⁷

The year of 1935 started out auspiciously with President Franklin D. Roosevelt issued a presidential proclamation on January 9 adding portions of section 13 of Township 9 South, Range 30 East to the land holdings of Fort Matanzas National Monument. The land constituted 17.34 acres and was used as the future site of the caretaker house and small museum for Matanzas.¹⁸

Plans continued for the restoration of the fort with additional ideas for work including the use of a wrought-iron stairway on the south side of the fort and the flying of a Spanish flag over the post. It was determined that the construction of a Spanish-style balcony and stairway would not be done as detailed information from that period was lacking. A continuing concern was that the vaulted ceiling showed more cracking and spreading and park officials suggested the use of the tie rods as a means of stoping further spreading.¹⁹

16. Kahler to Chatelain, November 15, 1934, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

17. A copy of the Historical American Buildings Survey drawings can be found in the library at the Castillo de San Marcos National Monument Administrative Office. (Illustration D-24)

18. Fort Marion and Fort Matanzas File, 1939 and 1940, Administrative Office, Castillo de San Marcos National Monument; Vint to Taylor, October 25, 1935, NA, RG 79, Fort Matanzas National Monument.

19. Kahler to Chatelain, March 5, 1935, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

The public accessibility to the fort improved when the Park Service awarded a Public Work's Project contract for building of two docks to be built on the east and west bank of Matanzas River. The actual work on the wharves did not begin until September, because of pile testing and water disturbances, when yellow-pine piers were constructed and extended 114 feet into the river. A charge was brought early in the work that hiring was being done in violation of Public Works regulations but, after an investigation, no charges were filed and the work continued. Construction was further delayed due to high tides and the wharves were finally completed on October 19 and given park approval on October 30, 1935.²⁰

Another major concern for park officials was shore erosion on both sides of the Matanzas River. This problem began when the Corps of Engineers rerouted the Intracoastal Waterway west of Rattlesnake Island and filled in a gap in the southern section of the island that had previously connected the inlet with tidal flats and marshes. The corps completed work on a dike closing the inlet in November 9, 1934 and gradually, erosion began on the shores of Matanzas River until by August 1935, park personnel began to worry about the damage to the shoreline. The erosion increased dramatically in September when in four days, the river current moved from within two feet of the southwest corner of Matanzas fort to cutting eighteen inches underneath the structure.²¹

20. Taylor to Director, June 10, 1935, NA, RG 79, NPS Central Classified File, Fort Matanzas National Monument; LaBey to O.P. Woodcock Company, September 26, 1935, NA, RG 79, NPS Central Classified File, Fort Matanzas National Monument; LaBey to Taylor, October 7, 1935, Correspondence File, Administrative Office, Castillo de San Marcos National Monument; Construction of Two Wharves at Fort Matanzas near St. Augustine, Florida, Public Works Project No. 539, Contract No. I-1B-3099, Administrative Office, Castillo de San Marcos National Monument; John C. LaBey. Construction Report on Two Wharves at Fort Matanzas National Monument, (St. Augustine: Castillo de San Marcos National Monument, 1935), p. 42. Franklin Roosevelt instituted many government relief programs to help end the great depression. In the text, I briefly mention those programs and agencies that were involved with work at Fort Matanzas National Monument, but for further reading suggest the following books for a more in depth understanding of the era: W. E. Leuchtenburg, Franklin D. Roosevelt and the New Deal (1963); A. M. Schelesinger The Coming of the New Deal (1959) and The Politics of Upheaval H. L. Ickes, Back to Work: The Story of the P.W.A. (1935); D. S. Howard, The WPA and Federal Relief Policy (1943); and J. K. Galbraith and G. G. Johnson Jr., Economic Effects of Federal Works Expenditures 1933 -1938 (1940).

21. LaBey to Peterson, September 19, 1935, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

John LaBey, a N.P.S. architect, after investigating the situation concluded: "A low bulk-head should be placed around the entire fort. It is apparently not built on a grillage and if there are any pilings, they are in a row around the outer wall."²²

A low bulkhead about 235 feet extending from the wharf along the north and east sides of Fort Matanzas. The bulkhead should be about 12 feet from the foundation of the Fort. The bulkhead will be filled with sand and used as a walk. It has been estimated that it will cost about \$14 per linear foot to construct ten bulkhead--about \$4,000 for the job. This rough estimate may be a little high.

On the Anastasia side it is thought the best remedy is to build up the jetties and add two of them.²³

The situation at the fort continued to deteriorate and by late October a park official feared:

If the erosion at the Fort continues much further, the foundations of the Fort, and the Fort itself, will be threatened. The structure of the Fort is none too good and in its present condition; and if any considerable amount of earth is washed away from beneath the foundations a collapse of parts at least of the Fort is possible.

From hasty conversations with the engineers of the United States Engineer Office, it is believed that a steel sheet pile wall about 400 feet long should be built in front of the Fort and recurving into the shore so that erosion along the length of the wall at least will be prevented. Or, as an alternative procedure, the sheet pile wall can be built entirely around the Fort. The space behind the wall should then be backfilled with any suitable material that can be found. The cost of this work will be about \$7,500 to \$10,000. The expenditure of this sum will remove the danger.²⁴

22. Ibid.

23. LaBey to Director N.P.S., October 4, 1935, Construction Reports, Fort Matanzas File, Administrative Office, Castillo de San Marcos National Monument. The jetties mentioned were to be located on the North and South of the newly built dock.

24. Nagle to Taylor, October 28, 1935, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

Acting Superintendent Kahler then requested additional help on the erosion problem, and United States Corps of Engineers District Engineer P. A. Feringa travelled to Fort Matanzas to evaluate the problem. In a report that followed the inspection and conference Feringa noted that on Anastasia Island near where the N.P.S. had recently built a dock were the remnants of three groins of five original groins which had been built some twenty years earlier. One of these groins were located south of the dock and the other two were on the north side of the dock. They had fallen into disrepair over the years due to lack of maintenance and at high tide, the groins were underwater and at low tide were detached from the shoreline. These circumstances rendered them ineffective in preventing eroision. Feringa offered several possible solutions and discussed the consequences of each action. He found the use of a timber bulkhead impractical, "because of the excessive activity of marine borers. . ." in the river. Dismissed with equal rapidity was the use of a permeable dike having two parallel rows of palmetto piles filled with rock. This method was deemed unsatisfactory due to the fact that the river currents would not allow sand to accumulate around the pile and thus expose them to attack by marine borers.²⁵

He then suggested four equally acceptable possibilities for shore line protection. These possibilities included: (1) a steel-sheet retaining wall with an elevation of four feet and a length of 1,800 feet using thirty and four-foot piles, (2) a coquina rock revetment covering an area of 14,000 square yards and containing 8,000 cubic yards of stone, (3) a series of ten steel-sheet pile groins stiffened with creosoted timbers and coquina rock riprap and (4) building of ten coquina-rock groins. Of these possibilities, Feringa recommended that the most inexpensive and satisfactory way of preventing further erosion was the use of ten coquina-rock groins.²⁶

He then turned his attention to the Rattlesnake Island shoreline and made this evaluation:

25. Feringa to Division Engineer, November 7, 1935, Matanzas Erosion File, Administrative Office, Castillo de San Marcos National Monument.

26. Ibid.

The use of groins similar to those recommended for the east bank would check erosion in the vicinity of the fort, and probably result in some procession of the shore line. The necessity for preventing further settling of the foundation of the fort, however, indicates the use of steel sheet piling to be (the) most satisfactory solution. The area to be protected is small, and the historical value of the fort is believed to justify the greater expenditure. The most economical structure to protect the fort from erosion and at the same time support the foundation on the water side would be a steel sheet pile bulkhead located as shown on the map herewith, braced with 30-foot creosoted timber piles bolted to the wales at 10-foot intervals, backfilled with sand, and protected by riprap to prevent undercutting. The recommended height of the top of the wall is 4.0 feet from the datum plane of the drawing. The length of piling should be 20 feet. Piling should be placed by jetting and not by driving, thus eliminating any vibration that might damage the fort.²⁷

Feringa then took the opportunity to evaluate the condition of the Fort. He found that:

The fort appears to be in bad condition structurally and in need of repairs, due to gradual and unequal settlement of its foundations. Except for the subsidence of the southeast corner of the rampart, this cannot be imputed to erosion of the river bank, but appears to be due to the unstable character of the soil on which the fort stands. The effect of the general settlement is marked. The arch supporting the roof of the building has become unsymmetrical, throwing excessive stresses into the western wall and causing spalling of the masonry near the spring line. The east and west walls of the building lean out very perceptibly, and the cornice passing around the entire structure at the level of the rampart is higher in the middle of the walls than at the corners. Numerous cracks appear in the masonry of walls and arch, some of which are said to be increasing in width. It is believed the foundation material could be sufficiently stabilized by extending the above recommended bulkhead entirely around the fort. This procedure is not essential to the project under discussion, but could well be combined with it.²⁸

27. Ibid.

28. Ibid.

This was the second time that the suggestion was advanced to enclose the entire fort in a steel bulkhead to stabilize the fort and at the same time protect it from erosion. Architect LaBey in 1936 again advanced the proposition that the fort be enclosed and his arguments were:

The masonry walls of the Fort rest directly on mud or sand. A row of piling was driven outside the line of masonry walls, then the structure built directly inside. Either from settling or the more recent menace, erosion, pointing has dropped out of the masonry and in many places the stones themselves have fallen. Large cracks have developed in the walls and floor.

It is not recommended that extensive restoration be performed, but certain parts should be repaired or afforded protection to prevent further destruction. A means of access should be provided throughout, and a bulkhead built entirely around the Fort for protection against erosion.

. . . The bulkhead around the Fort should be erected before most of the restoration can be performed for jetting of the piling is liable to cause further settling, widening of cracks, or development of new ones.²⁹

The suggestions for a steel bulkhead were acted on by the park and a design for the bulkhead was prepared by the Eastern Division of the National Park Service Branch of Plans and Design. The project was offered for bid and contract awarded on July 7, 1936 to the Tidewater Construction Company of Norfolk Virginia. The bulkhead was designed to surround the fort on the south, east and a small portion of the north side. The reason why the bulkhead was not to extend completely around the fort was due to lack of available funds for such a project. Construction work began on October 19, 1936 and completed on December 22, 1936 with the steel sheet bulkhead standing a little above four feet mean low water level and topped with a reinforced concrete cap. The bulkhead stood a distance of twelve feet from the fort and

29. John C. LaBey, "Recommendation for Restoration of Fort Matanzas near St. Augustine, Florida." (Unpublished manuscript dated February 1936, NA, RG 79, NPS Central Classified File, 1933-49, Fort Matanzas National Monument), p. 3.

the space between was backfilled and covered with large flat stones while the river side of the bulkhead wall had riprap placed against it in a sloping manner from the concrete cap to the ground level.³⁰

At the same time, two groins were built on the east bank of the Matanzas River. One was located 120 feet south of the dock and extended 97 feet into the river and the other groin was located 150 feet north of the dock and extended 78 feet into the river. The original plans called for ten groins to be built here; however, due to lack of funding only two were built at this time. ³¹

Besides the shore stabilization work, other Public Works Administration projects were undertaken at Fort Matanzas. Acting Superintendent Kahler in December of 1935 requested that the following projects be considered for funding:

1. A cast iron stairway from ground to the first terreplein-distance about 16 ft. A metal stairway suggested instead of coquina so that the visitor will not be led to believe the stairs are a part of the fort. Originally, the Spanish needed a ladder.
2. New floor for second story. The present floor is too thin and a number of boards are missing.
3. A metal flagpole to be fastened to the roof length of pole about 3 ft.
4. Iron grating over cistern opening.
5. Hatch cover on upper terreplein.
6. Path of coquina gravel from wharf to and around fort.
7. Pointing of stone especially on the east wall. Major Repairs
1. Repair of arch supporting upper terreplein. Examination of arch Dec. 5 revealed further cracking.³²

Kahler's main concern was that there was not enough funding available to achieve the projects that he had outlined. It was suggested that one way to alleviate the financial problems was to have Civilian Conservation Corps establish a winter camp near Fort Matanzas and work on the fort.

30. T. L. Bailey, "Final Report on Erosion Control, Matanzas River Along the Monument Area." (Unpublished manuscript dated July 28, 1937, Administrative Office, Castillo de San Marcos National Monument), pp. 1-7.

31. Smith to Taylor, September 17, 1937, Matanzas Erosion File, Administration Office, Castillo de San Marcos National Monument.

32. Kahler to Taylor, December 7, 1935, Fort Matanzas Construction Reports File, Administrative Office, Castillo de San Marcos National Monument.

This recommendation was never implemented and the early work around the fort was often terminated due to lack of funds.³³

The next year planning continued for the restoration work on the fort. Architect LaBey submitted an ambitious proposal which recommended that the arch be reconstructed and iron tie rods be inserted under the floor joists on the second floor to hold the east and west walls together with tie rods also placed so as to connect the north and south walls. The existing tie rods were located at the crown of the arch which tended to spread the arch at the spring line and caused the constant popping out of stones on the fort face. LaBey, also, recommended midsection repair be made on the east parapet wall in the upper terreplein and closing of the fort access used by the St. Augustine Historical Society, with the new access stairway located on the west side of the fort. LaBey contemplated the idea of plastering the entire structure with white stucco, but rejected it because of fear that such a radical change would damage the historic fabric. He, also, found that in the north and west walls red bricks were used for repairs and LaBey wanted these removed and replaced with coquina stones. On inspecting the second floor, he suggested that the existing floor be removed and replaced with a more historic floor that would use two-inch thick boards. LaBey further suggested that a wooden frame hatch with a canvas cover be placed on the roof opening to prevent additional rotting of the ladder leading to the roof and the second floor. His final recommendations were that a wrought iron grating be placed over the cistern opening and a thirty-foot galvanized--steel flagpole be erected on the northeastern corner of the upper terreplein or, if more convenient, on the lower terreplein toward the front of the fort. These recommendations were evaluated by park and regional officials, but little or no action was taken on the suggestion.³⁴

Superintendent Kahler became increasingly concerned about the deterioration of the fort and believed that the spreading of the arch and rotting of the second floor made the interior of the fort unsafe for visitors. However, the park did not address this problem, but instead rebuilt the entrance stairs into the fort. Probably this task was chosen because the park planned a dedication ceremony of Fort Matanzas National Monument on October 12, 1937 and the stairs would allow public access to the fort. Also the building of the stairway would not interfere with the planned reconstruction of the fort which

33. Swanson to Peterson, October 29, 1935, Fort Matanzas Construction Reports File, Administrative Office, Castillo de San Marcos National Monument.

34. John C. LaBey, "Recommendations for Restoration of Fort Matanzas near St. Augustine, Florida.", pp. 6-13.

was scheduled to occur in the next few months. It was determined that no attempt would be made to reconstruct the original Spanish stairway and balcony because the outer tower wall was considered too weak to support this structure. The contract for work was approved on June 17 and the job completed on July 9 with this new stairway being built on the west side of Fort Matanzas and the constructed of creosoted clear-heart-grade red cypress. A temporary stairs of similar construction was built to the second floor.³⁵

During the stairway construction, tests were conducted to determine if the fort arch needed reconstruction and what, if any, foundation the fort rest upon. The method of testing the arch was that:

First two points to be used as bench marks were set and their elevation established from our original bench mark. From these two points, all four corners of the Fort were visible. A nail was driven in each corner and an elevation obtained on the head. Further observations will show whether there is any settling or not. Two and sometimes three hubs were also placed in line in the ground and a nail in line with tacks in the hubs set near the top and bottom of the four corners of the Fort. Further observations on these nails will tend to show if the thrust of the arch is pushing out the walls.

Along the west wall of the Fort an evacuation was made. After going down about 2 1/2 ft. below the ground line at the base of the Fort, we came to what was apparently a 'slab' made of coquina. After enlarging the opening and clearing out the mud and water, we could see that it was made of blocks about 7 in. or 8 in. thick up and down, but 14 in. to 16 in. across, cemented together, with staggered joints. Couldn't tell how far this 'slab' went as hole filled with water. Probed with 3/4 in. gas pipe 18 ft. long. Pushed pipe at approximately twenty-degree angle in four different locations, but struck nothing. Only slight effort was required to push pipe in ten to twelve feet.

35. Kahler to Chatelain, March 5, 1935, Correspondence File, Administrative Office, Castillo de San Marcos National Monument; Swanson to Hollard, April 19, 1937, Administration Building Fort Matanzas File, Administrative Office, Castillo de San Marcos National Monument; Swanson to Vint, August 9, 1937, Administration Building Fort Matanzas File, Administrative Office, Castillo de San Marcos National Monument.

I imagine the Fort rests on a mixture of fine sand and silt. There is a possibility that the coquina 'slabs' underly the entire Fort and have so far given it its premanecy.³⁶

The findings from the arch test must have indicated some movement of the arch as the park superintendent ordered that bars be placed on the doors of the fort so that visitors could look inside, but not enter into the building.³⁷

For the moment, all reconstruction work was ceased at the fort and the finishing touches made on the newly built headquarters on the west bank of the river in preparation for the Columbus Day dedication festivities. The headquarters contained a living area for the Matanzas care-taker, a small visitor center and a visitor comfort station. Plans for the headquarters were drawn up in May of 1935 by the Eastern Division, Branch of Plans and Design of the N.P.S. The contract was awarded to O.P. Woodcock Company of Jacksonville, who completed work in the building in January of 1936 and next a road was constructed from Anastasia Boulevard to the headquarters site. These projects continued with work around the headquarters building being completed around July and the road opened to travel in September.³⁸

Additional preparations for the Columbus Day opening included a one-day ferry service to the fort. Park officials originally contemplated operating a daily excursion trip by speed boat for visitors that would shuttle them between Fort Marion and Fort Matanzas, but this idea was dropped when the park failed to locate any concessioner willing to take on the project. The superintendent contracted for the day of the Fort Matanzas celebration Francis Usina's Victory II to carry visitors to the fort. The vessel carried a total of 112 passengers and Usina planned to charge twenty-five cents per round trip for adults and fifteen cent for children under twelve.³⁹

37. Kahler to Taylor, June 12, 1937, Administrative Building Fort Matanzas File, Administrative Office, Castillo de San Marcos National Monument.

38. "Fort Matanzas Driveway Near Completion", July 25, 1937, Fort Matanzas National Monument General File, Administrative Office, Castillo de San Marcos National Monument; "Fort Matanzas to be Great Show Spot in the Community", July 29, 1936, Fort Matanzas National Monument General File, Administrative Office, Castillo de San Marcos National Monument.

39. "Government-Sponsored Projects Create Work, Help Community", September 20, 1936, Fort Matanzas National Monument General File, Administrative Office, Castillo de San Marcos National Monument; Kahler to Director National Park Service, September 28, 1937, NA, RG 79, NPS Central Classified File, 1933-49, Fort Matanzas National Monument.

Ceremonies began on October 12, 1937 at St. Augustine and in the afternoon, the focus of activities moved to Fort Matanzas headquarters. The official program proclaimed the day as "the 200 Anniversary Celebration of the Building of Fort Matanzas" and festivities began with ribbon cutting ceremonies for the new road presided over by Mrs. Fred Cone, the wife of the Florida governor. This was followed by speeches from Floridian politicians including Governor Fred Cone, Senator Claude Pepper and St. Augustine Mayor Walter Fraser. Also present and giving speeches were various officials of the National Park Service. The speeches all praised the N.P.S. efforts at Matanzas and encouraged people to visit the historic site and were followed by a pageant in which 150 people participated. The pageant depicted highlights of Fort Matanzas and St. Augustine history which included several scenes of fierce battles between Indians, Spaniards, English soldiers and pirates. These opening ceremonies attracted a crowd estimated at over two thousand.⁴⁰

However, not all the people were pleased with the work being done at Fort Matanzas National Monument and a local newspaper reported:

The New Deal's scholarly interest in local Spanish ruins is going to cost the taxpayers plenty. Spending money as though it grew on orange trees, the Government has laid out tens of thousands of dollars to preserve Fort Matanzas, fifteen miles below this city, and untold thousands more to lure historically minded tourists to the scene of bygone colonization. And the end is not yet in sight.

Fort Matanzas, on Rattlesnake Island, is only forty feet square. An insignificant bump when viewed from the shore of Anastasia Island, nobody ever thought much of it, historically or other wise, until Public Works Administrator Harold L. Ickes discovered it and saw its job-making possibilities.⁴¹

The article then delineated the amounts of money being spent for the restorative work on Fort Matanzas and concluded with the observation that: "Local residents shake their heads over the expensive luxury the New Dealers have dumped in their laps. 'It seems,' says one, 'as if they spent as much as they could. It's our money,' he adds disconsolately, 'but they don't ask us.'"⁴²

40. "National Monument Dedicated Yesterday at Picturesque Fete", October 13, 1937, Fort Matanzas National Monument Historical File. Administrative Office, Castillo de San Marcos National Monument; H. E. Ahler, "Fort Matanzas Celebration, October 12, 1937." (Unpublished manuscript, Administrative Office, Castillo de San Marcos National Monument), pp. 1-5.

41. "Fort Matanzas is a Tax-Eater: The New Deal is Dumping Thousands into Spanish Ruins in St. Augustine," newspaper clipping no date, Fort Matanzas File, Saint Augustine Historical Society, St. Augustine, Florida.

After Fort Matanzas had been officially dedicated the Park Superintendent developed plans for a ferry service to transport visitors to the structure. In November 1937, Superintendent Kahler was approached by Robert Quigley, who offered to operate a ferry to Rattlesnake Island for a fee. He planned to do this by having four rowboats available for rental at the Anastasia Island docks and these boats could be rented for twenty-five cents per hour or one dollar for a day. The tourists could then row themselves across the Matanzas River and inspect the fort at their leisure. This operation ran through 1944, but the boats were used more by fishermen than by sightseers. In addition to this concession, approval was given in 1939 for operation of a glass bottom boat to travel from Marineland up the Intercoastal Waterway and dock at Fort Matanzas. No records exist to show if this scheme was actually carried out. Meantime, the use of the rowboats began to decline at the beginning of World War II, and this trend continued throughout the war years. Also the park service staff believed that the boats were unsafe and so at the end of the war, park officials began looking for other ways to transport tourists to Fort Matanzas.⁴³

The efforts at finding a satisfactory solution to the transportation problem were to continue for years, but a more pressing problem facing the park after the dedication ceremony was the need to reconstruct the arch of the fort. In September 1938, arch reconstruction plans were completed then in preparatory work for the reconstruction, elevations were measured and it was determined that the second floor elevation measured 105.84 feet and the first floor interior elevation measured 97.50 feet with the exterior terreplein of the fort measuring 98.30 feet. Official approval for the work came in October and bracing then placed around the tower.⁴⁴ By the end of December, work was underway at Matanzas and Hillory Tolson, Chief of Operations for the National Park Service, wrote: "The restoration work at Fort Matanzas also was inspected, when it is completed this outpost fort will withstand weather and water action for years to come."⁴⁵

43. Taylor to Director National Park Service, April 26, 1944, NA, RG 79, NPS Central Classified File, Fort Matanzas National Monument; Wilt to Director National Park Service, June 27, 1944, NA, RG 79, NPS Central Classified File, Fort Matanzas National Monument.

44. Hillory Tolson to Cammerer, December 28, 1938, NA, RG 79, NPS Central Classified File, 1933-49, Castillo de San Marcos National Monument; There are two sketches of arch reconstruction in Fort Matanzas map drawer at the administrative Headquarters of Castillo de San Marcos National Monument.

45. Ibid.

The work continued into the next year and in February of 1939 contract N.P.S. Engineer Olinus Smith wrote of the problems encountered:

The work at Fort Matanzas is progressing very slowly due to the shortage of labor. Since I last reported on this work January 10th., the arch has only been heightened by three or four courses of coquina blocks. Cement finishers, due to their hourly wage, have only a few hours a month of work. This, I am told, is reason why the work has not made more progress. Beginning today eight men and a cement finisher will be employed there all this week. It is estimated that it will require not less than 30 days to complete the arch and walls.

On the west side of the river, sand bars have been built out until the river is very shallow. The area below the Fort is at the present time being slowly eroded, caused principally by wave action, since due to its shape and the shallow water current here would have but slight effect, if any.⁴⁶

Smith's solution to these problems was to request that eight more groins be built on the east bank. If that was not feasible, he wanted at least three groins constructed. On the west bank, he asked that a cheaply constructed bulkhead be built from the easternmost portion of the present bulkhead some 1200 feet south into the river.⁴⁷

This proposal was not acted on, but two years later the park began shoreline stabilization work by completing a partial constructed groin that lay between the pier and Fort Matanzas on Rattlesnake Island in 1939. Addition groins were planned for the island, but Smith found after inspection of the groin locations, that:

46. Smith to Gray, February 7, 1939, Olinus Smith File, Administrative Office, Castillo de San Marcos National Monument.

47. Ibid.

The approximate location for the two (2) groins, shown on the blue print, were, during our conversation at the Fort, given up and some light construction in the form of a timber bulkhead made by using materials on hand. The bulkhead construction is expected to eliminate the small ripping wave action which loosens the muck and sand so that the tidal currents are enabled to carry the materials away. The long, shallow bottom at this location, south of the Fort, precludes any benefit which might accrue from groin construction.⁴⁸

This timber bulkhead was a temporary measure as a more substantial coquina seawall was being planned. However, before this construction could begin repairs were needed on the first steel seawall. Smith in early 1940 discovered that there was:

. . . the necessity for some immediate means of cleaning and preserving that portion of the steel sheet piling now exposed on the river side of Fort Matanzas. From a rough estimate, it is thought that about 1400 square feet of this piling will need to be treated. The fill in front has, because of the wind and water action, been removed and the metal piers are exposed for a section two or three feet wide all along the water front. The metal is badly rusted and scaled and should be hammered and scraped with wire brushes to remove all rust and then have one or preferably two coats of red lead. On top of this, there should be two or three coats of hot asphalt. This should be applied to just as low a point as the tide action will allow and from there to the top of the wale. The sheet piling should then be back filled with clay and small pieces of coquina, and on top of this, one-man pieces.⁴⁹

In March of 1940, a proposal was drawn up for work at Fort Matanzas that included the cleaning of the steel sheet piling, construction of a new coquina seawall and building of two groins. This plan called for the space between the old and new seawall to be filled with

48. Smith to Regional Director, January 26, 1939, Olinus Smith File, Administrative Office, Castillo de San Marcos National Monument.

49. Smith to Freeland, January 16, 1940, Olinus Smith File, Administrative Office, Castillo de San Marcos National Monument.

available material then topped with four inches of humus and this covered with sod. The park superintendent also wanted a five foot wide coquina walk constructed from the dock at Matanzas to the fort, and three groins built on the east bank of the river.⁵⁰

The Emergency Recovery Administration (E.R.A.) undertook the project and by early April, work crews had nearly completed the cleaning and painting of the steel bulkhead around the fort and started work on two groins to be placed north and south of the fort. In May, approximately half of the coquina seawall were built and the south groin completed and enough coquina quarried to complete the seawall. Thor Borresen visited the project and discovered, much to his shock, workers using as backfill for the retaining wall, sand taken from a section of high ground some seventy-five feet from the fort. Borresen believed that this site had been a lunette with ditch and glacis and: "The destruction of this elevation in question would result in the disturbing of prepared protection for the fort." This fact was pointed out to Junior Park Historical Technician Albert Manucy and work was immediately stopped.⁵¹

This problem was resolved by taking fill from further north on the island and in June, the E.R.A. crews had completed ninety-five percent of their work on the seawall and groins. The work on back-filling behind the seawall was completed in August and riprap placed against the wall. Another groin was built from scrap left over from other projects and this work was completed in September. Despite these improvements, the spring tides broke over this newly constructed barrier as it was never completed to the architect's recommended height, but additional work on this erosion problem would wait until after World War II.⁵²

50. Puderer to Regional Director, March 4, 1940, Fort Marion File, 1939-40, Administrative Office, Castillo de San Marcos National Monument.

51. Thor Borresen, "Report on a Suggested Treatment of Fort Matanzas", (Unpublished report dated October 23, 1940, Administrative Office, Castillo de San Marcos National Monument), p. 1.

52. Freeland to Director National Park Service, September 10, 1940, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument; Freeland to Director National Park Service, June 10, 1940, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument; Bennet to Director National Park Service, August 8, 1940, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument; Gray to Regional Director, NA, RG 79 NPS Central Classified File, Fort Matanzas National Monument.

At the same time as work was being completed on shoreline stabilization, restoration work and planning continued for the National Monument. A plan was advanced in Congress in 1939 for the incorporation of Fort Mantazas National Monument and Fort Marion National Monument with lands in between to form the Saint Augustine National Historical Park. No action was taken on the bill by Congress and after this no further attempts were made to reintroduce the proposal.⁵³

Thor Borresen, travelled to St. Augustine in 1940 and evaluated the restoration program at the fort. He found that the N.P.S. had constructed an exterior stairway from the terreplein to the second floor of the tower which obstructed the original rifle loopholes and the view from one of the windows. He also believed that the second floor entrance was not original, but was cut in the tower at some later date.⁵⁴

Borresen then examined the second floor and found:

The wooden floor now in this tower is very much of an absurdity and under no consideration can be considered as restoration.

1. The flooring itself should have been laid with random width board and nailed with tree nails or rather wooden pegs which was the custom in all fortifications were (sic) wooden decks were used, and where powder was subject to be spilled on the floor.

2. All the small floor or jack beams should have been hand hewn or else cut with a whip saw instead of by a circular saw. They should also have varied a little in dimensions.

3. Probably the most crude construction was the construction of the two summer beams running the full length of the room on the under side of the small jack beams.

The writer was informed that two large tie rods were

53. Undated paper material, Castillo de San Marcos File, St. Augustine Historical Society, St. Augustine, Florida.

54. Borresen to Regional Supervisor of Historic Sites, March 19, 1940, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

to draw both ends of the building together and that they had been placed where the former summer beams were located and that the present built up summer beams encased those rods.⁵⁵

Historian Borresen also found it distressing that the flagpole on top of the tower was so rigged that the hoisting of the flag could be done only from the terreplein. He requested that this be changed so that the flag could be raised and lowered from the top of the tower as he found the method used for raising and lowering the flag to be destroying the historic fabric of the fort.⁵⁶

In response to this evaluation, Albert Manucy, wrote that the park's work at Fort Matanzas was basically a reconstruction of the War Department work and not a restoration as "no specific research had been done in Fort Matanzas constructional history." Manucy then recommended that no major restoration work be undertaken at Fort Matanzas until this history was completed and added:

As was pointed out in Mr. Kahler's memorandum, the existing outside stairway is based upon features shown in two maps dated respectively 1765 and 1821. No earlier maps are as yet discovered. Change of the stairway feature is not suggested at this time because 1) documentary information is lacking, and 2) this face of the wall has been rebuilt at least twice and may not contain accurate evidence upon which to base a restoration.

It would probably be feasible, however, to replace the wooden floor in the tower and remove the built-up summer beams in line with Mr. Borresen's suggestions. Mr. Eaton has already abandoned the system of handling the flag from the lower deck.⁵⁷

55. Ibid.

56. Ibid.

57. Manucy to Superintendent, April 9, 1940, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

The park took further actions on these suggestions and removed the summer beams and the following year, the flagpole on the fort was removed when one was erected at the Anastasia Island Headquarters.⁵⁸

Borresen made a return trip to Matanzas in May of 1940 and in October submitted a formal report on suggested treatment for the fort. He reiterated his belief that the terreplein stairs were not historically accurate and suggested that the stairs be relocated closer to the parapet wall and a small porte-cochere and balcony built. To accomplish this work, Borresen wanted holes made in the tower wall and timbers placed in these holes to support the weight of the proposed balcony. Borresen recommended on the first floor that a tabby floor be laid or some material which would present a similar appearance as tabby be use. His investigation of this floor also revealed some niches in the wall which he believed served for holding timbers for a bed. He next examined the top of the tower and found that it had been covered with a thin layer of asphalt like material in an effort to waterproof the structure. Borresen wished this material removed and". . . this floor be covered first with a thin layer of sand upon which should be laid tabby or some other material, approximately 2 1/2 inches thick, and preferably laid in different dimensional squares resembling coquina blocks." Then as a finishing touch to the reconstruction work, Borresen wanted new construction of frames for the doors, windows and hatch cover on the roof.⁵⁹

The park agreed with Borresen's proposals with a few minor exceptions. Albert Manucy, writing for the park, commented that the tabby floor should be laid as a single layer as historically tabby floors in the St. Augustine area were laid in that manner. The supervisor of historic sites for the National Park Service added the further suggestion that the southeast wall of the fort could not support the weight of a stairway, but the restoration work was never undertaken. The entrance of the United States into World War II postponed any funding for restoration work at Fort Matanzas.⁶⁰

58. Freeland to Director National Park Service, September 16, 1941, NA, RG 79, NPS Central Classified File, Fort Matanzas National Monument.

59. Thor Borresen, "Report on a Suggested Treatment of Fort Matanzas," pp. 2-5.

60. Manucy to Superintendent, December 2, 1940, Attached to "Report on a Suggested Treatment of Fort Matanzas", Administrative Officer, Castillo de San Marcos National Monument: Lee to Regional Director, January 6, 1941, Attached to "Report on a Suggested Treatment of Fort Matanzas", Administrative Office, Castillo de San Marcos National Monument.

The park also found it difficult to justify spending for restoration when the public would not even visit the fort. The southeastern Regional Director Thomas Allen commented on this problem in December 4, 1941:

Fort Matanzas can hardly be considered available to the public under present circumstance. The fort is within view of the opposite shore of the waterway, but cannot be reached without a boat. It is hoped that arrangements can be made in some way to supply a public boat service to Fort Matanzas. There is no likelihood of this occurring immediately, and the comment is made merely to indicate feeling should some opportunity arise. 61

The allocation of funds to support the war effort ended any hopes of supplying a useful ferry service to the fort for the next few years.

During the war, only maintenance work was done at the fort until a hurricane lasting from October 13 to 21, 1944 struck the fort destroying portions of the coquina seawall, damaging the southeastern corner of the fort and eroding portions of Rattlesnake Island. Also damage was done to the stairways at the fort and this was quickly cleaned up and repaired; however, it was not until September of 1945 that the break in the coquina seawall was given temporary repairs. Recommendations were then made for a protective groin to be built with a elevation of 5.1 feet and 5 feet crown containing 675 cubic yards of material to be constructed on the southeast corner of the coquina seawall. As an alternative method of dealing with the erosion problem, it was suggested that a temporary coquina revetment be built and this is what the park did until more extensive repairs could be accomplished. 62

The next year Fort Matanzas Custodian Edward J. Eaton requested that a groin be constructed at the southeast corner of Matanzas and some type of hard surface material be placed between the steel sheeting

61. Allen to Director, December 4, 1941, NA RG 79, NPS Central Classified File, Fort Matanzas National Monument.

62. Vinten to Director, August 7, 1945, NA, RG 79, NPS Central Classified File, Castillo de San Marcos National Monument; Jones to Allen, July 25, 1945, NA, RG 79, NPS Central Classified File, Fort Matanzas National Monument.

piling and the fort. This request was not acted on and in 1947 and again in 1948, the southeast corner of the fort and protective groins suffered minor storm damage. Park officials attempted to have work done in 1947, but only one company expressed an interest in the project and their bid was more than double the amount of funds available for repairs. The next year, the park succeeded in awarding a contract and late in 1948 work began on rebuilding the coquina seawall at Fort Matanzas. The task was completed in February of 1949 with 800 cubic yards of stone and 100 cubic yards of sand used to construct a new groin on the southeast corner of the fort. While the seawall was being repaired, the steel sheet piling was painted and the space between the steel sheet piling, and the coquina seawall backfilled.⁶³

Park Superintendent C. Raymond Vinten believed that:

Inspections made since the work was completed indicate that it is effective, and we believe that it will furnish a fair degree of protection to the exposed corner of this historic structure. It is quite evident that in order to give adequate protection to this corner of the fort that two additional small groins will have to be built and the area between the steel sheet piling and the fort walls paved with coquina rock or concrete slabs. There is also a great deal of stabilization work to be done on the fort walls.⁶⁴

The need for additional protection was proven in 1951 when the park had to repair storm damage to the coquina seawall. This additional work was not done at this time and years would pass before anything more than maintenance would take place on the groins or seawalls.⁶⁵

During the time that repair work was being done on the erosion control structures at Fort Matanzas. A major masonry stabilization program was undertaken at Castillo de San Marcos National Monument and

63. Eaton to Vinton, August 27, 1946, Major Repair and Rehabilitation for Fort Matanzas National Monument File, Administrative Office, Castillo de San Marcos National Monument; Vinten to Director, March 11, 1948, Major Repair and Rehabilitation for Fort Matanzas National Monument File, Administrative Office, Castillo de San Marcos National Monument.

64. Vinten to Regional Director, April 5, 1949, Shore Stabilization File, Administrative Office, Castillo de San Marcos National Monument.

65. Manucy to Superintendent Castillo de San Marcos, July 3, 1952, Historian File, Administrative Office, Castillo de San Marcos National Monument.

Fort Matanzas National Monument. Between October 1947 and December 1948 the southeast corner of Fort Matanzas was repointed and repaired. Then in 1951 and 1952 additional stabilization programs were performed on the fort which included repointing of the tower and west wall.⁶⁶

The mortar used in the masonry work was a mixture of white or brown sand with white or gray cement used to produce color shades to match the historical material. The exact compositions used were:

For underwater work the mix used one part cement to two parts sand, wet enough to pour from the bucket into the submerged form boards.

For low level work where forms were initially dry, the mix was one part cement, one part sand, two parts shell; the mix wet. Tamp or agitate thoroughly to insure penetration of crevices.

For capping broken stones with a mortar having a texture similar to shellrock, or for dry repointing in foundation joints, the mix was one part cement, two parts sand, three parts shell, in fairly dry mix. Tamp thoroughly.

For dry repointing in vertical walls exposed to view, use one part cement, three parts sand. Make the mix dry--that is, just wet enough for good adhesion, and stiff enough to stay readily in place. Color of the mix can be varied by use of white or gray cement and white or brown sand, in order to blend with surrounding masonry. Tamp thoroughly. Metal mortarboards, bent in U-shape to guide the mortar into joints, hole to make clean job.

The water used for the work was clean salt water and wooden floats and tamps were used for finishing off the mortar work.⁶⁷

66. Ibid.; Albert C. Manucy, "Report on Masonry Stabilization at Castillo de San Marcos and Fort Matanzas National Monuments from October 1947 to April 1949", Administrative Office, Castillo de San Marcos National Monument, p. 40.

67. Albert C. Manucy, "Report on Masonry Stabilization at Castillo de San Marcos and Fort Matanzas National Monuments from October 1947 to April 1949", Administrative Office, Castillo de San Marcos National Monument, pp. 50-52.

This masonry work was the most extensive work done at the fort, but some minor work occurred including the relocation of high tension power lines from north of the fort. A flagpole was installed again on the northeast corner of the fort, but was later removed. Also land was added to the national monument when on August 28, 1945 when some 120 acres of tideland marshes on Anastasia Island were donated by the state of Florida to the park; this gift was recognized by President Harry Truman on March 24, 1948. This proclamation also added an additional 89.42 acres of land in the public domain on Rattlesnake Island bringing the total acreage of Fort Matanzas National Monument to 227.76 acres.⁶⁸

During the 1940s and 1950s another continuing problem was the need for reliable and convenient water transportation to Rattlesnake Island for visitors. In one conference held in 1949, Chief Historian Ronald Lee, Museum Administrator Paul Hudson, Park Hudson, Park Superintendent C. Raymond Vinten, Regional Historian Roy Appleman and Park Historian Albert Manucy reached the following conclusions:

The discussion centered on the problem of how to deal with Fort Matanzas since it appears unlikely that there will ever be satisfactory boat service from Anastasia Island to the fort itself. It now appears rather certain that the long-range policy of the Service will have to be to provide the necessary interpretive facilities at the inlet in the vicinity of the pier and the Superintendent's residence. At the present time, there is nothing here except a terrain orientation drawing by Manucy. A small museum of certain exhibits should be planned. Markers and overlook devices can be provided on the pier. From this point a clear view of Fort Matanzas across the inlet is available in good weather. I think that some device, using a telescope arrangement trained on Fort Matanzas should be provided to give visitors a close-up view of the fort. The lenses of such a device would, of course, have to be protected from spray. Manucy will work on a prospectus to accomplish an interpretive program for Matanzas.⁶⁹

68. Vinten to Maintencemen Masters, December 15, 1950, Historian File, Administrative Office, Castillo de San Marcos National Monument; Summerville to Vinten, May 10, 1949, Land Acquisition File, Administrative Office, Castillo de San Marcos National Monument; Vinten to Regional Director, August 10, 1949, Land Acquisition File, Administrative Office, Castillo de San Marcos National Monument.

69. Appleman to Regional Director, July 11, 1949, Historian File, Administrative Office, Castillo de San Marcos National Monument.

Despite these conclusions, the fort was not totally inaccessible to the visiting public since Custodian Eaton would occasionally transport visitors over to Rattlesnake Island in a twelve-foot park service boat, but this was not done on a regular basis. In 1950, park officials negotiated a contract with John Hart Jr. to operate a ferry service between Anastasia Island and Fort Matanzas. Hart used a thirty-foot boat and charged a fee of thirty-five cents for adults and fifteen cents for children; unfortunately, this venture proved less than profitable and was discontinued after less than a year.⁷⁰

In 1953, an innovative solution to the water transportation problem was proposed by William Dietlein, a handicapped veteran. He proposed to purchase a two and one-half ton war surplus Army "duck" and wanted to use this vehicle to transport twelve visitors at a time across the waterway and on to Rattlesnake Island. Dietlein believed that with his compensation payments, he could earn a living in this manner. Park Superintendent Vinten seemed willing to try this scheme, but the plan was never implemented.⁷¹

The idea of providing public transportation to the island then was temporarily given up and in 1955, the acting Regional Director A. C. Stratton commented:

Fort Matanzas seems to be one of the best examples of the truth of the adage, distance lends enchantment. It seems doubtful to us that a visitor would gain very much by taking the trip across the east channel of the Matanzas River. Indeed, he probably would suffer loss in park experience in making the trip. Fort Matanzas, very likely, would not gain many friends through close acquaintance. On the island of that name, rattlesnakes probably would be uppermost in the mind of the visitor and much of the charm of the old fort as viewed across the water would be lost on close inspection.⁷²

70. Edward Eaton, Interview with at home on Anastasia Island, Florida, May 11, 1978; Vinten to Regional Director, August 8, 1950, Correspondence File, Administrative Office, Castillo de San Marcos National Monument; Vinten to Castillo personnel, January 24, 1951, Superintendent File, Administrative Office, Castillo de San Marcos National Monument.

71. Dietlein to Vinten, August 4, 1953, Correspondence File, Administrative Office, Castillo de San Marcos National Monument; Vinten to Regional Director, August 11, 1953, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

72. Stratton to Superintendent, Castillo de San Marcos National Monument, November 25, 1955, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

Despite this attitude against the ferry operation, the park worked actively toward the goal of establishing permanent ferry service and listed this project as one of their objectives in planning for "Mission 66". The plans for Fort Matanzas not only included ferry service, but also erosion control structures, masonry stabilization at the fort and armament restoration. Besides these plans in 1956, the park began work on replacing the two piers at Fort Matanzas National Monument. The new docks cost over six thousand dollars and were constructed by the Shugart Construction Company. The rest of the 1950s saw little work done on the fort or shoreline stabilization except for the constant activity of repairing existing groins and repointing masonry at the fort with the only new addition to the fort being the placement of interpretive signs there in 1959.⁷³

The early 1960's saw little work at Matanzas beyond the ordinary maintenance projects, but changes occurred at the monument when in 1962, 1963 and 1965 a total of 70.99 acres of land were donated to the park and this brought the total acreage of the monument up to 298.75 acres which it remains at today. Also planning began work on the wharves when in 1963, Park Superintendent Bertrum C. Roberts had Florida Skindivers Incorporated study the pilings of the piers. They recommended that all the pilings of the docks needed repairs and Regional Landscape Architect Irvin C. Lloyd on visiting the site confirmed the findings of the unsafe condition of the dock. He also inspected the fort and found:

From the main floor of the Fort to the second floor there is an interior ladder stairway of which the uppermost tread to the second floor has a riser distance twice the riser distance between the other treads. Since there is an exterior stairway to the second floor and a visitor is accustomed to climbing stairway or ladder with the same amount of riser between treads, I recommend the interior stairway, which is a safety hazard, be removed by the Park's maintenance force.

73. "Mission 66 for Fort Matanzas National Monument", April 19, 1956, Mission 66 File, Administrative Office, Castillo de San Marcos National Monument. "Mission 66" was a ten year program by the National Park Service to update facilities with a completion date set for 1966, the fiftieth anniversary of the establishment of the Service. Eaton to Vinten, June 30, 1956, Contract File, Administrative Office, Castillo de San Marcos National Monument; Sarver to Director, July 4, 1961, Annual Reports File, Administrative Office, Castillo de San Marcos National Monument; C. Raymond Vinten, Interview with at St. Augustine, Florida, May 10, 1978.

The concrete second floor is supported by wooden beams. Dry rot has deteriorated the beams to the extent that the magazine portion of the floor is starting to sag. Recommend architectural studies be made for consideration of replacing the wooden beams with perhaps steel.

The park removed the ladder, but no work was done on the interior beams of the fort and the next year the dangerous wharf pilings were repaired.⁷⁴

While working on the piers, it was discovered that repairs were needed on the seawall and groins at Fort Matanzas; but before repairs could be carried out, the most severe typical storm in modern times swept over Rattlesnake Island. Hurricane Dora tormented Fort Mantzas from September 7 through 11, and at its height sustained winds of 125 m.p.h. and generated waves of between twenty and thirty feet. Winds and waves damaged the fort, piers and shore at Fort Matanzas National Monument. Emergency reconstruction and cleanup work began immediately and lasted into 1965 with projects like work on the seawall delayed until additional funds were available. In an effort to document the damage, Assistant Regional Director E. M. Lisle suggested that infrared and black and white aerial photographs be made of the coastline near Fort Matanzas. He further believed". . . that besides the initial work covered by this proposal that aerial photographs should be taken each year or if necessary after a hurricane." The park completed this original project, including the aerial photographs, but did not carry out the work on a yearly basis.⁷⁵

74. Roberts to Regional Director, April 5, 1964, Superintendent File, Administrative Office, Castillo de San Marcos National Monument; Lloyd to Regional Director, April 19, 1963, Superintendent File, Administrative Office, Castillo de San Marcos National Monument.

75. A.J. Mehta and C. P. Jones, Matanzas Inlet, Glossary of Inlets Report #5 (Gainesville: University of Florida, 1977), p. 20; Kent to Superintendent Castillo de San Marcos National Monument, October 4, 1964, Superintendent File, Administrative Office, Castillo de San Marcos National Monument; "Cleanup and Restoration of Services for Visitor Use", June 29, 1966, Construction Reports File, Administrative Office, Castillo de San Marcos National Monument; Lisle to Superintendent Castillo, December 10, 1964, Correspondence File, Administrative Office, Castillo de San Marcos National Monument.

In 1965, work continued on shoreline stabilization plans with sand dune restoration work being done on Anastasia Island and an erosion control project at Rattlesnake Island being put up for bid. The Rattlesnake Island project consisted of work on groins, riprap and revetment and included placing of ninety linear feet of timber sheetings and placing of backfill which was then covered with humus and sod.⁷⁶

The work on this project began on January 25, 1966 by W.D. Dupont and Sons contractors. They first moved coquina rock over to the fort. Next the steel bulkhead was scraped, repainted and treated with a bituminous preparation as a rust preventative. Then work was done on restoring the existing groins and coquina seawall. Eighteen inches of fill was placed over the ground around the fort and on top plastic sheets were laid then four foot wide strips of sod. Between the sod strips, Italian ryegrass was seeded. All of the work was given a final inspection on March 28 and payment made on April 5, 1966.⁷⁷

Shoreline stabilization was not the only continuing problem at Fort Matanzas, But maintaining a full-time ferry service proved just as elusive a goal. After several years of sporadic service, a concessioner was found in 1965 willing to provide ferry service to Matanzas during the summer months, holiday periods and weekends during the winter months. This concessioner terminated his contact with the Park Service in March of 1967 due to lack of business, but was persuaded to continue the ferry service on a month-to-month basis when the park offered to supplement his income by paying him \$200 a month.⁷⁸

76. Press Release--Castillo de San Marcos National Monument, September 9, 1965, Press Release File, Administrative Office, Castillo de San Marcos National Monument.

77. Luis Arana, Interview with at Fort Matanzas on Rattlesnake Island, May 5, 1978; Bailey to Edmondson, April 27, 1966, Shore Stabilization File, Administrative Office, Castillo de San Marcos National Monument; Dune Restoration and Storm Damage of Fort Matanzas, March 28, 1966, Construction Reports File, Administrative Office, Castillo de San Marcos National Monument.

78. Davenport to Director National Park Service, June 1, 1967, Annual Reports File, 1966-67, Administrative Office, Castillo de San Marcos National Monument; "Attendance for Calendar Year 1965", January 4, 1966, Press Release File, Administrative Office, Castillo de San Marcos National Monument.

Park officials saw this action only as a temporary measure and started laying plans for a permanent solution to this problem. One suggestion offered asked for:

The possibility of incorporation a historic period structural design into the tour boat to stimulate greater interest in this trip should be considered. The Spanish used small vessels for transport to and from watchtower and fort sites during the historic period. The interpretive benefits of a trip in a historic vessel could be substantial. Such a boat would need a modern propelling mechanism, a capacity to meet the needs indicated above, and should provide a safe and reasonably comfortable trip.⁷⁹

This plan was never implemented and ferry service continued infrequently until September 1970 when the ferry service was discontinued entirely. Water transportation to Fort Matanzas was resurrected in 1972 with the inauguration of service by the 24-foot, eleven-passenger Matanzas Queen. Until 1974, passengers over twelve years of age were charged fifty cents for a round trip, but at that time the park discontinued the fee and expanded the service to six days a week. The Matanzas Queen has continued operations up to the present time.⁸⁰

Meanwhile little was done on the fort beyond necessary maintenance until, as part of the "Mission 66" program, replica 19th century Spanish cannon carriages were constructed. Park officials believed that the mounting of the fort's two guns on the period gun carriages would add to public interest and education at the site. Carriages were made for both Castillo de San Marcos National Monument and Fort Matanzas National Monument by the Federal Prison Industries at Lorton, Virginia. The cypress timber carriages were delivered to St. Augustine on April 26, 1967 at which time, the park maintenance crew dismantled the carriages, treated the ironwork with Rust-oleum, applied walnut stain and linseed oil to the wood, and reassembled the carriages. The carriages were moved to Fort Matanzas and hoisted onto the terreplein where two 9-pounder cannons were installed on the carriages. The accomplished one of the park goals in restoration of Fort Matanzas.⁸¹

79. Fort Matanzas National Monument Master Plan (draft copy at Castillo de San Marcos National Monument, Ca. 1968) p. 34.

80. "Press Release,". December 15, 1972, Press Release File, Administrative Office, Castillo de San Marcos National Monument.

81. L.T. Davenport, "Completion Report, Construction of Gun Carriages, August 10, 1967, Construction Reports File, Administrative Office, Castillo de San Marcos National Monument.

The Fort Matanzas National Monument Draft Master Plan prepared in 1973 and revised in 1976, presents additional goals the park wished to achieve at the fort. The plan defined the chief objective in all restoration work as to". . . re-create the 1742 to 1763 fort appearance." The plan stipulated that authentic restoration would be limited by the need to provide visitor access and safety at the fort. In this regard, it was suggested that in any future rehabilitation work the stairways and ladders at the fort be redesigned as the present ones were obtrusive to the historic setting and unsafe.⁸²

Other suggestions for restoration and preservation work at the fort centered on early reconstruction efforts done at the fort. A 1973 survey of masonry forts in the National Park Service system found the following:

Matanzas was restored in the 1930's. The degree of accuracy of the restoration has yet to be fully measured. Many of the wooden members placed in the structure at that time show marked signs of rotting and should be replaced. The beams in the second floor room have rotted. The wooden stairs leading from the ground outside the fort to the terreplein is deteriorating and needs to be replaced. Moreover, they are not historic in appearance. The stairway from the terreplein to the upper room is also rotting and it, too, lacks historical appearance. Safety for the visitor is an important reason to replace the wooden stairs. The stairways should be replaced only after a study has been conducted that will indicate a design of stairs more accurate historically.⁸³

These same problems were found at the fort when Walter J. Nitkiewicz, National Park Service Museum Specialist, inspected the fort in 1976 and in addition, he found that at least one of the beams at Fort Matanzas badly tunnelled by termites.⁸⁴

82. Fort Matanzas National Monument Draft Master Plan (Denver: Denver Service Center, 1976), p. 2.

83. F. Ross Holland Jr. and Russell Jones, Masonry Forts of the National Park Service (Denver: Denver Service Center, 1973), p. 56.

84. Nitkiewicz to Allen, March 29, 1976, Nitkiewicz File, Administrative Office, Castillo de San Marcos National Monument.

As the maintenance of wooden members of the structure of Fort Matanzas is a continuing problem the park has established a criteria to follow when repairs are found necessary at the fort. This procedure is that the wood to be used in the repair is to be treated with Wolman Salts cut to rough size and, finally, had dressed with hand plane, drawknife, foot adz or spoke shave. The actual construction would use mortise and tenon methods and employ dovetail and wooden pegs to simulate historic authenticity.⁸⁵

The maintenance of the masonry, as well as the wood members of the fort structure, has occupied the park crews since the reconstruction of the arch in the 1930's. The standard mixture for masonry work since 1974 has been a mixture containing one or two parts white Portland cement, three or four parts lime and eleven to fourteen parts sand blended together with varying amounts of water. The type of Portland cement used is ASTM, C150, type I, white with the type of lime used being ASTM, C207, type S, high plasticity and the sand used is to be washed fine. Coquina stone, oyster shell, colored sand, and colored dyes are sometimes added to the mixtures for coloration and historic texture simulation. Also used on the fabric of the fort were modern chemical wearcoats in an effort to prevent the tower roof from leaking and constant maintenance work goes on replacing, repointing and repairing the masonry of the fort. The park maintained a series of books which describe the day-to-day maintenance work done on both Castillo de San Marcos National Monument and Fort Matanzas National Monument. The books also contain the formulas used in mixing of the various compounds used in the repointing and repairing of the two forts.⁸⁶

Another area which requires constant maintenance is the task of shoreline stabilization. Hurricane Dora in 1964 not only damaged Fort Matanzas and the erosion control devices surrounding the fort, but it also cut Rattlesnake Island in two. This caused a build up of a sand bar south of Fort Matanzas and by 1972, the bar almost connected

85. "Fort Matanzas National Monument, Historical Resource Management Plan", (Unpublished manuscript date August, 1977, at Administrative Office of Castillo de San Marcos), p. III:3.

86. John Harley, Record Fort Matanzas Masonry, (notebook kept by maintenance crew at Castillo de San Marcos National Monument, 1974-78), pp. 311-314; John Harley, Record Castillo de San Marcos, Masonry (notebook kept by maintenance crew at Castillo de San Marcos National Monument, pp. 26-28.

Rattlesnake Island with Anastasia Island. This land bridge would not only bring uncontrolled public access to the fort, but it would essentially destroy the historic setting of the fort. The United States Corps of Engineers solved this problem by building a granite boulder dike accross the break, thus diverting the water back to the original course which then quickly eroded the sand bar.⁸⁷

Another erosion control problem occurred in 1976, when the ten groins on the east bank of the Matanzas River required repair and the park enlisted the assistance of the Youth Conservation Corps for this project. A team of seven boys and seven girls ranging in age from fifteen to eighteen years worked that summer on placing coquina stone on these deteriorated groins. This team also placed a layer of oyster shells on the leading from the dock to the fort site on Rattlesnake Island.⁸⁸

After the summer of 1976, the park officials found that work was still needed on shore stabilization on the east bank of the Matanzas River and on the old fort. The park submitted a Development/Study Package Proposal in October 1977 to the Denver Service Center for work on the two problems. Since then a combined team of Historical Architects, Historians, Civil Engineers, and Archeologist have been studying the problems and have retained various professionals to act as consultants for the project. This team is now preparing recommendations on future work to be undertaken on Fort Matanzas.⁸⁹

87. T. Quentin Burnson, "Sedimentological Study of Matanzas Inlet, Florida and Adjacent Areas", (Unpublished Master's Thesis, University of Florida, 1972), p. 20; "Fort Matanzas National Monument, Historical Resource Management Plan", p. I:23.

88. "Girl Muscle Put Park Rehab on Lib List for St. Augustine", newspaper clipping, August 14, Fort Matanzas File, Saint Augustine Historical Society.

89. The existing conditions of the fort and reports gathered together by the Denver Service Center can be found in the architectural data section of the Historic Structure Report. Also photographs of the fort for the period from 1935 to the present can be found in the Architectural section.

SECTION III
ARCHEOLOGICAL DATA

Prehistoric Resources

Archaeological evidence exists which indicates continual human occupation of Florida since the Paleo-Indian Period (Griffin, 1952; Cockrell and Murphy, 1978). Deagan (1976: 6, 13) reports that archaeological sites have been found in the general Fort Matanzas area with cultural affiliations ranging from the Paleo-Indian through the Orange, St. John's I, St. John's II and Historic Periods. To date, little prehistoric remains have been located within the monument boundaries. What evidence that has been found reveals that either there was occupation during the Orange Period followed by a break until the Historic Period, or that there was an Orange Period occupation followed by seasonal habitation until the Historic Period (Deagan, 1976, 5, 107). Specific prehistoric resources are the Marker Midden on Anastasia Island (Gluckman, 1966), which contained Orange and Historic Period pottery, and the midden north of the fort on Rattlesnake Island, which contained two Deptford sherds. Also, scattered Orange and St. John's Periods sherds have been found in the monument boundaries (Gluckman, 1966: 2-6; Deagan, 1976: 107). Both Anastasia and Rattlesnake Islands have been subject to alteration over the years, caused by natural and man-caused erosion and redeposition (Deagan, 1976: 8-12). It is possible that this process has caused the destruction or inundation of additional prehistoric archaeological evidence.

Historic Resources

Historic resources within the monument boundaries can be placed in two categories: those which have been located, and those known from documentary research, but which have not been located. The historic resources which have been located are: Rattlesnake Island--Fort Matanzas, and two middens, one north and one west of the fort; Anastasia Island--the Marker Midden, a scatter of historic material near the Johnson House (Gluckman, 1966), and another such scatter near the visitor center (Deagan, 1976: 104-105).

Historic sites which have been documented but not located are: Rattlesnake Island--ancillary and possible defense structures in the immediate vicinity of Fort Matanzas and a "barracks" structure (Ibid.: 3, 22); Anastasia Island--a wooden watchtower erected by the Spanish in 1569 on the highest ground on the island, and the actual site of the 1565 Spanish massacre of some 245 French soldiers (Ibid.).

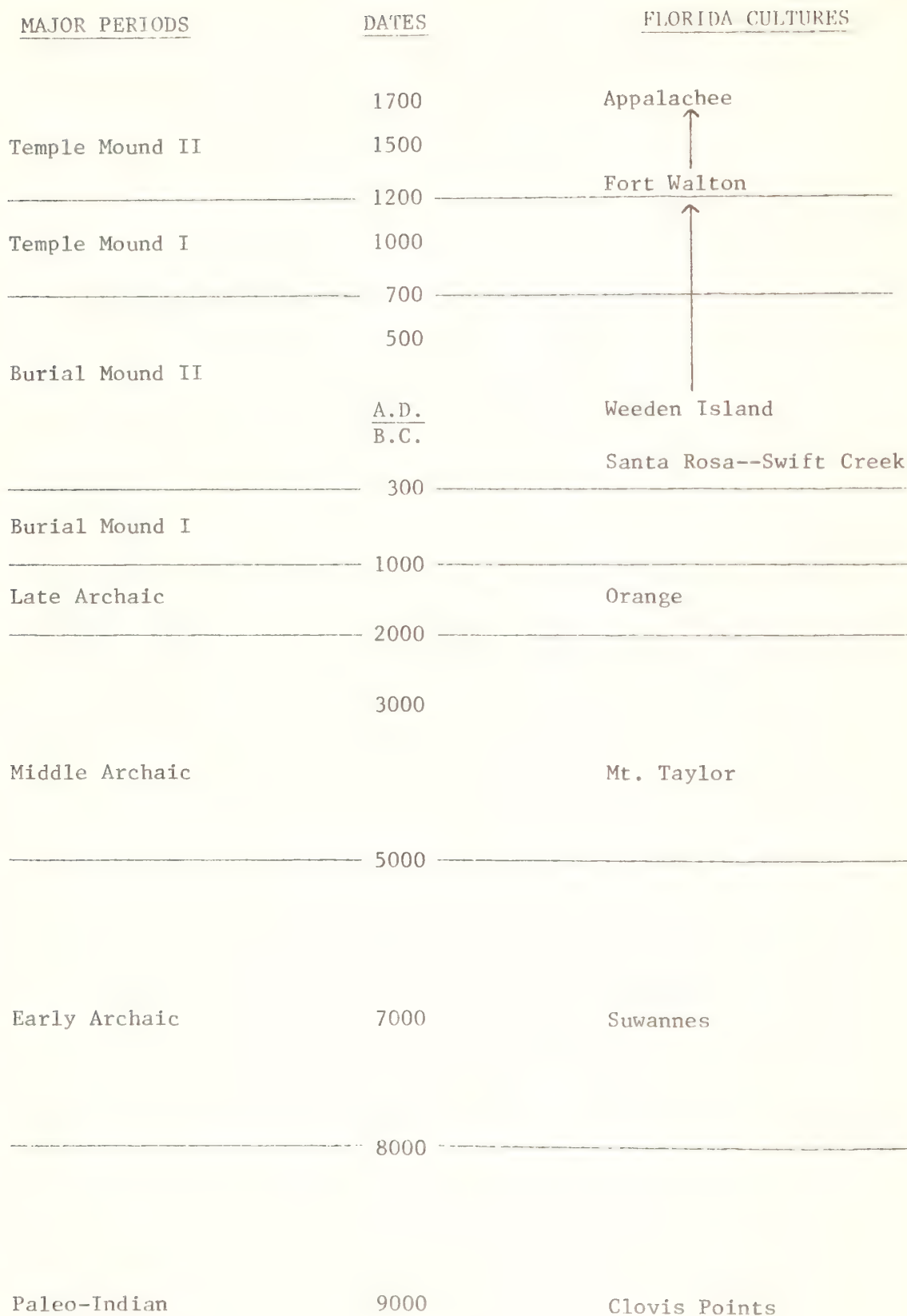


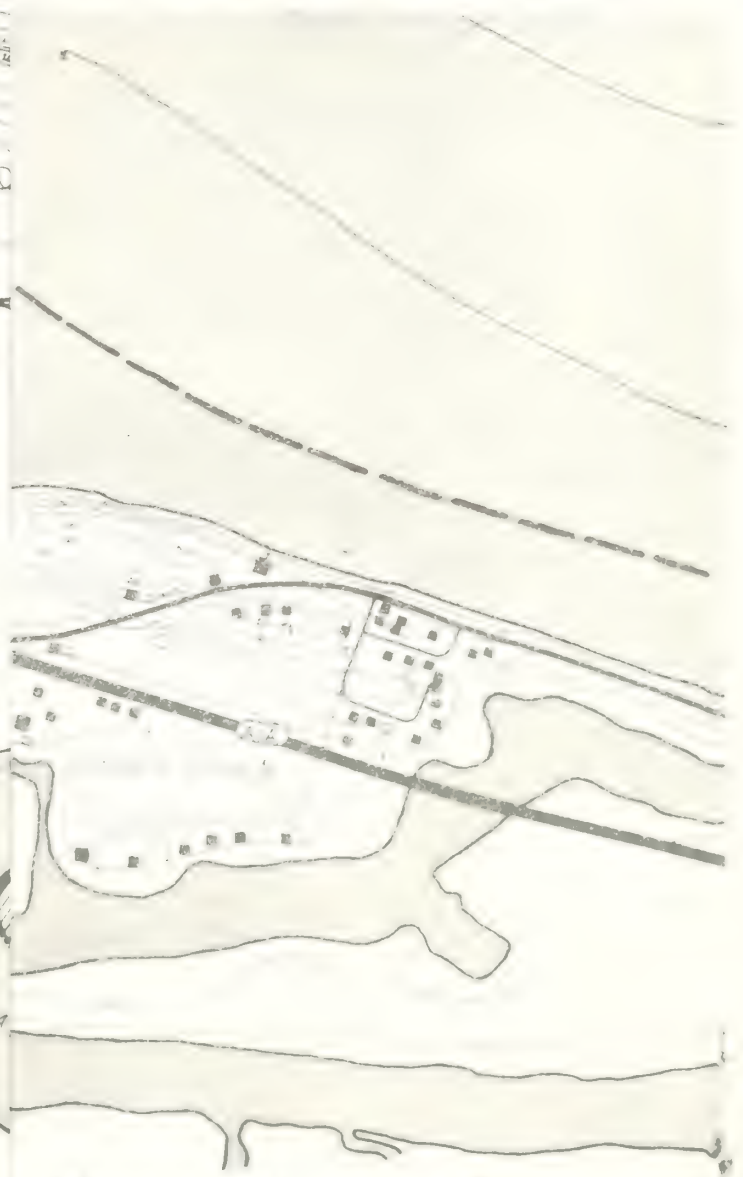
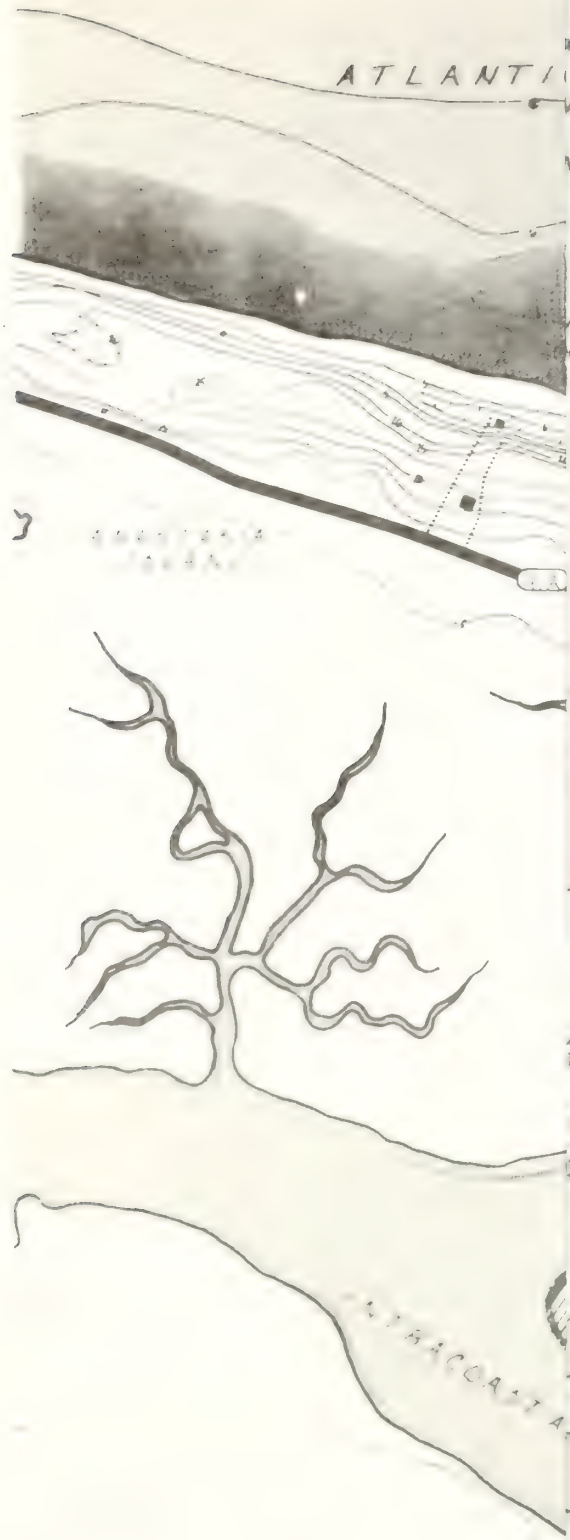
Illustration 8

Cultural Sequence for Florida (Willey, 1966; 250)

Legend










- VE 1 SENSITIVE AREAS, SIGNIFIKANT RESOURCES - IDENTIFIED STRUCTURES, MONUMENTS & ARCHEOLOGICAL SITES (TESTED)
- VE 2 SENSITIVE AREAS, POTENTIAL SIGNIFIKANCE - POSSIBLE ARCHEOLOGICAL SITES (NOT TESTED) AND LANDS ADJACENT TO SIGNIFIKANT CULTURAL RESOURCES
- VE 3 LESS SENSITIVE AREAS, TERTIARY SIGNIFIKANCE - BOTH TESTED AND NOT TESTED AREAS OF LOW PROBABILITY OF SIGNIFIKANT CULTURAL REMAINS
- APPROXIMATE LAND CONFIGURATION DURING HISTORIC PERIOD (1742-1769)
- STABLE GROUND DURING HISTORIC PERIOD

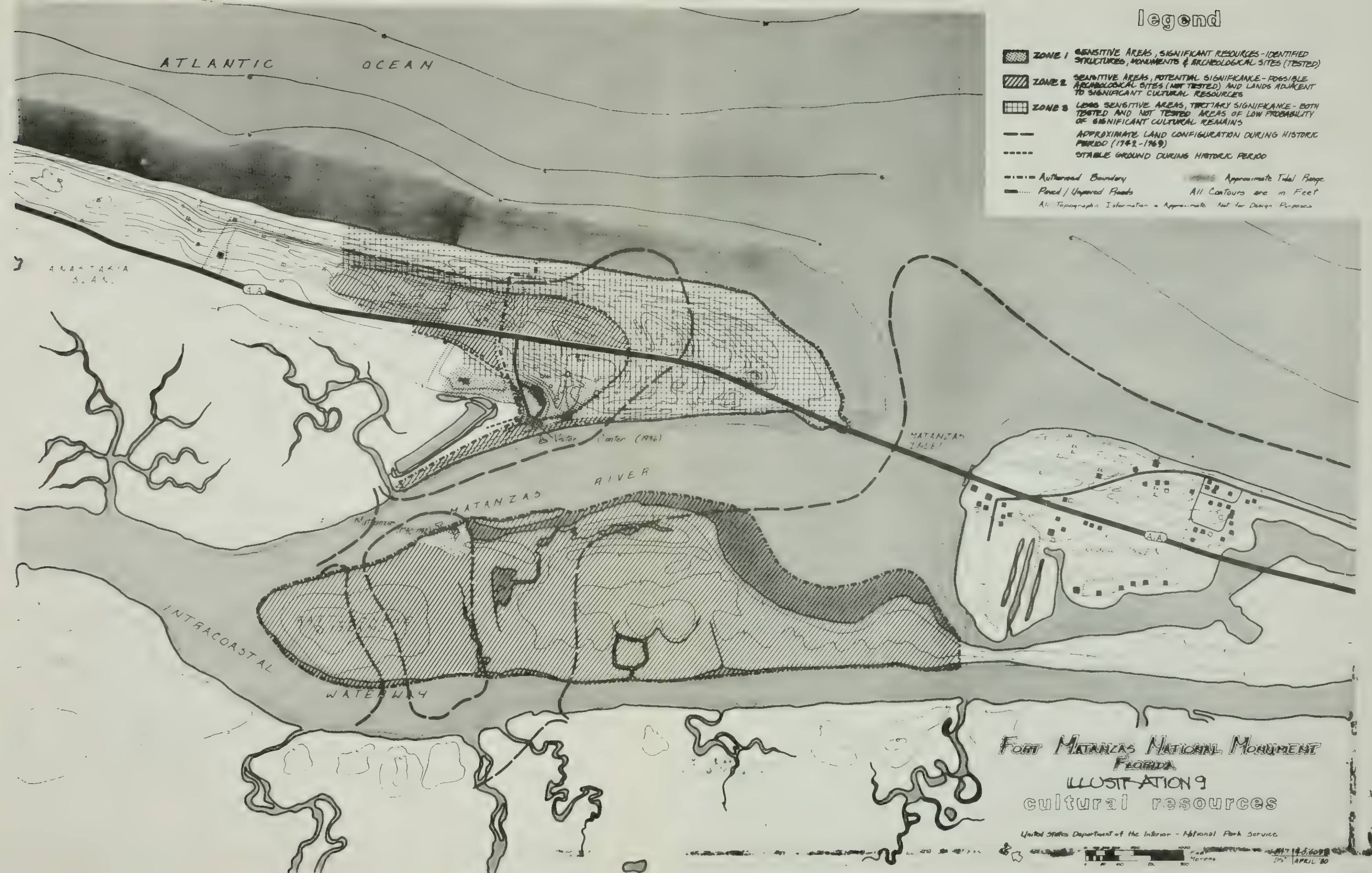
Married Boundary
 Moved / Unmoved Roads
 Approximate Tidal Range
 All Contours are in Feet
 Topographic Information is Approximate Not for Design Purposes



MATANZAS NATIONAL MONUMENT
 FLORIDA
 ILLUSTRATION 9

Legend

-  **ZONE 1** SENSITIVE AREAS, SIGNIFICANT RESOURCES - IDENTIFIED STRUCTURES, MONUMENTS & ARCHEOLOGICAL SITES (TESTED)
-  **ZONE 2** SENSITIVE AREAS, POTENTIAL SIGNIFICANCE - POSSIBLE ARCHEOLOGICAL SITES (NOT TESTED) AND LANDS ADJACENT TO SIGNIFICANT CULTURAL RESOURCES
-  **ZONE 3** LOW SENSITIVE AREAS, TERTIARY SIGNIFICANCE - BOTH TESTED AND NOT TESTED AREAS OF LOW PROBABILITY OF SIGNIFICANT CULTURAL REMAINS
-  APPROXIMATE LAND CONFIGURATION DURING HISTORIC PERIOD (1742-1769)
-  STABLE GROUND DURING HISTORIC PERIOD
-  Authorized Boundary
-  Paved / Unpaved Roads
-  Approximate Tidal Range
-  All Contours are in Feet
- All Topographic Information is Approximate Not for Design Purposes



Previous Archaeological Investigations

Stephen Gluckman, of St. Johns River Junior College in 1966 carried out the first intensive archaeological survey of the monument under a contract with the National Park Service. His goal was simply to locate and evaluate all archaeological sites within the monument boundaries. Through foot-survey methods, he located the Historic Period middens north and west of Fort Matanzas on Rattlesnake Island, the Orange/Historic Periods midden near the massacre marker and the thin scatter of historic material near the Johnson House (Gluckman, 1966).

During April 1975, the National Park Service sponsored a program of survey and excavation in the monument. The program was carried out by a team of archaeologists from Florida State University directed by Dr. Kathleen Deagan. The purposes of this program were to survey, locate, and test archaeological resources within the monument; to prepare a cultural resources base map; and to gather "specific data about the extent, nature processes of cultural occupation of the monument area" (Deagan, 1976: 1). During the 1975 field season, the hypothesized watchtower site, the massacre site area, the area around Fort Matanzas, the two middens north and west of the fort, and the visitor center site reported by Gluckman were selected for test excavation or augering (Ibid., 1).

The research design for the 1975 archaeological program as developed by Deagan sought to gather evidence to test three hypotheses concerning human occupation in the monument area. These were:

1. That the midden sites would reveal evidence concerning the balance between the use of "European" foodstuffs supplied to the Matanzas garrison from St. Augustine, and food obtained locally from aboriginal sources. If prehistoric levels were found in the middens, archaeological evidence should reveal a shift from a seasonal exploitation pattern by local Indians to a year-round resource exploitation pattern followed by the Spanish garrison.
2. That ethnic affiliations, and degrees of acculturation on historic sites can be gauged by the presence of specific patterns of aboriginal-European artifacts. At Fort Matanzas, it was believed that the garrison would be isolated from the acculturative processes at work in St. Augustine, which stemmed from Europeans and Native Americans sharing a locale. Thus, evidence obtained from the Fort Matanzas area could be used to test the acculturative model developed by Deagan at St. Augustine.
3. That archaeological data could supply evidence concerning prehistoric occupation of the area. Specifically, that this evidence could be employed to test the following hypotheses:

A. that Archaic and St. John's I, a-b occupations were followed by a break until the Historic Period; B. that the area was seasonally occupied by St. John's I and II people (Deagan, 1976: 104).

The 1975 program failed to locate the location of the watchtower in the area tested. However, the site reported by Gluckman near the visitor center was found to contain Spanish and Indian material which may be linked to the watchtower. Attempts to locate the specific 1565 massacre site were also unsuccessful. On the basis of what is known about the erosional history of the island, it is likely that the present massacre marker is located on a spot under water in the 16th century (Deagan, 1976: 105).

On Rattlesnake Island, soil augering failed to locate the ancillary and defense structures, or the "barracks" structure. The north midden did contain remnants of Spanish building materials of types not used in the fort, however, thus providing indirect evidence of other structures in the area. It is likely that recent preservation work carried on around the perimeter of the fort destroyed direct evidence of such structures (Ibid., 104).

Although a great deal of information on the subsistence patterns among the garrison at Fort Matanzas was collected from the two middens, no prehistoric levels were found. This ruled out any comparison between aboriginal and European resource exploitation patterns at the site. Also, the analysis of faunal remains indicated that Native American women were present among the garrison. These women were thus exposed to the same acculturative forces which were at work in St. Augustine. This discovery nullified an accurate test of Deagan's acculturation model (Ibid., 111).

The fact that no prehistoric archaeological evidence was found during the 1975 program left the question regarding prehistoric settlement patterns of this area unsettled. The apparent lack of prehistoric archaeological remains from periods after the St. John's I (b) supports the hypothesis that the area was unoccupied after this time. However, the 1975 program did not test those areas most suitable for seasonal occupation--the high bluffs above the Matanzas River (Ibid., 107).

In August-September 1978, the National Park Service sponsored a program of archaeological investigations to provide data for architectural stabilization of Fort Matanzas. Specifically, the program sought to:

1. Confirm the historic grade in the lower floor of the observation tower, reveal the presence or absence and nature of Colonial Spanish floors and built-in furniture, and answer questions regarding the fireplace.

2. Locate the Colonial grade, surface, and nature of fill, and the extent of settling in the main terreplein.

3. Confirm the presence and location of a palmetto log palisade around the fort.

4. Establish the depth and nature of the outer wall foundations.

Other than locating the position of the observation tower fireplace, the 1978 program met all of the above goals. (See Appendix G for full report.)

Recommendations for Further Archaeological Investigations

Because of its "Sunbelt" location and availability of a wide range of outdoor recreation opportunities, Florida's population is one of the fastest growing in the United States. To accommodate this expanding population, land development in Florida has proceeded at a very fast pace. One of the unfortunate side effects of this rapid development has been the destruction of a great many archaeological sites. It is incumbent upon the National Park Service to make every effort to conserve all archaeological resources within its control in Florida. It is recommended therefore that all archaeological research within Fort Matanzas National Monument be governed by a conservation policy. No archaeological resources within the monument boundaries should be excavated unless one or more of the following conditions are met:

1. Archaeological data sought from excavation cannot be obtained from any sites located outside the monument boundaries. This data should be obtained from such non-NPS sites, as their likelihood of eventual destruction is much greater than those within the monument boundaries. Every attempt to obtain needed data from the sites should be made prior to their loss. If this condition appears to be met, the research proposal for archaeological excavation should be subject to extremely close scrutiny and approval by the Southeast Archaeological Center, National Park Service.

2. An archaeological site which is determined to be in clear danger from loss due to natural causes (i.e. water erosion), should be excavated under a research design developed to obtain the maximum use of all data recovered from the site. The Southeast Archaeological Center should have full authority to determine such dangers and evaluate and approve the research design and methodology if the work is conducted by non-NPS archaeologists. The research design should be coordinated with the Florida State Historic Preservation Officer and such institutions with a valid interest in archaeological research in the Fort Matanzas area.

3. The excavation of a particular site will yield data which is judged to be critical to the preservation/stabilization of Fort Matanzas.

4. A particular archaeological site is threatened by a National Park Service undertaking which has been determined to be essential in the preservation of Fort Matanzas.

Specific archaeological investigations which should be undertaken are:

1. Excavations in the ground floor of the observation tower to provide data necessary to determine the nature of the stone platform in the northwest corner of the room; the location of the hearth and fireplace; the nature and number of steps into the room at the various grade levels identified by Deagan (1978).

2. As it appears that the midden lying north of the fort is threatened with damage or destruction from water erosion and/or seawall construction designed to halt the water erosion danger to the fort. It thus should be excavated to preserve as much data as possible.

Fort Matanzas National Monument is listed in the National Register of Historic Places. All undertakings within the monument boundaries which have a potential for affecting significant cultural resources are subject to the provisions of the 1966 Historic Preservation Act and its implementing procedures, 36 CFR 800. As archaeological excavation is in reality the intelligent destruction of a cultural resource, all requirements of the above legislation as well as pertinent National Park Service Management Policies and Activity Standards must be met in regards to archaeological research within the monument.

SECTION IV
ARCHITECTURAL DATA

IV. ARCHITECTURAL DATA SECTION

INTRODUCTION

In this section of the Historic Structure Report, data pertinent to an understanding of Fort Matanzas and how it has evolved to its present condition with its current (1978) stabilization problems is presented. Information in this section will be useful in planning restoration actions, but such efforts are beyond the scope of this document which focuses on the more basic problems of structural preservation. Every effort has been made to conform with the chief objective of the 1973 Master Plan which stipulates that all preservation work be directed towards the recreation of the fort to its appearance of 1742-63, the first Spanish period. Development/study package proposal No. 104 calls for the stabilization of Fort Matanzas to include treatments of the coquina masonry, tie rods, terreplein and foundation as necessary. It also calls for stabilization of the Rattlesnake Island shoreline, the site of the building, to include completion of work begun previously and rebuilding of existing deteriorated groins. Each of these problems issues has been assessed as well as others which surfaced during investigations; attention has also been directed to issues of safety and matters pertaining to visitor access.

Generally speaking, keeping water out of an historic structure is a principle of good architectural preservation. In the case of the Matanzas Monument, however, this could be accomplished only by way of an extensive program of restoration, providing apertures with historic coverings and plastering the coquina masonry. But, the Watchtower is a rather open-air building at this stage and appears to be generally stable in this condition within the local climate. It is thought best, therefore, to recommend some protection against excessive water infiltration--which slowly erodes the building materials--but not to recommend that major restoration actions be undertaken in this phase of work.

It should be noted that many of the stabilization treatments proposed can be classified as an intensive maintenance effort with the implication that a concerted cyclic maintenance program must become an important aspect of park planning. The stabilization of this historic building must not be considered final treatment, but rather the initial step of an on going stabilization process. With this approach, problems will not be allowed to rise to critical levels. Because of the limited money presently available only a portion of the recommendations made in this report can be funded. Additional actions should be taken as funding becomes available.

The Matanzas monument is a symbol of eighteenth century Spanish Imperialism, a relic of early military architecture and a part of the

American Heritage. In this regard it must be preserved and interpreted in its historical context--a sentry tower as an extension of the St. Augustine military colony. What stands today at the Matanzas Inlet could be termed a stabilized ruin. Despite a century of disastrous decay, remedial reconstruction, and current structural and erosion problems, the building is structurally sound and formally intact.

Another factor which must be taken into account in this report is that the Matanzas monument is the scene of visitation and interpretation functions which introduce possible compromise to architectural forms and details and introduce mechanical impacts and loads which require additional concern. These factors--a Spanish sentry tower presently a stable ruin, visited by over 35,000 individuals annually--combine to create the conceptual matrix within which current preservation treatments are proposed.

The illustrations which follow (Illus. 10 and 11) indicate the functional organization and vocabulary necessary to understand Fort Matanzas and provide a graphic representation of its historic appearance. The historic period has been established as including the life of the watchtower during the first Spanish period. This occupation spans some twenty-one years between 1740-1742 when the structure was erected by the military garrison stationed at the St. Augustine colony and 1763 when the British obtained possession of the Floridas. In the first illustration, the five major sections of the building are labeled. In the second illustration, additional architectural elements are identified, although this is not an inclusive vocabulary of military defense terminology.

A. Historic Appearance of Fort Matanzas

Despite changes during its 75 year period of functional occupation, a century of neglect and decay, and over sixty years of reconstruction and repair variations, Fort Matanzas maintains the basic form of its historic appearance. The fort is a unique relic of military architecture in the United States although similar structures exist on other continents.

Military architecture is an ancient art which has evolved in response to the evolution in military technology and strategy. By the late Middle Ages the art of defense had risen to a rather sophisticated and scientific level of precision based on practical geometry and a hierarchial system of impregnability. The Matanzas monument is a good example of this military ingenuity, and its preservation and interpretation are important within the context of the Spanish role in the Americas, especially in the St. Augustine defense system.

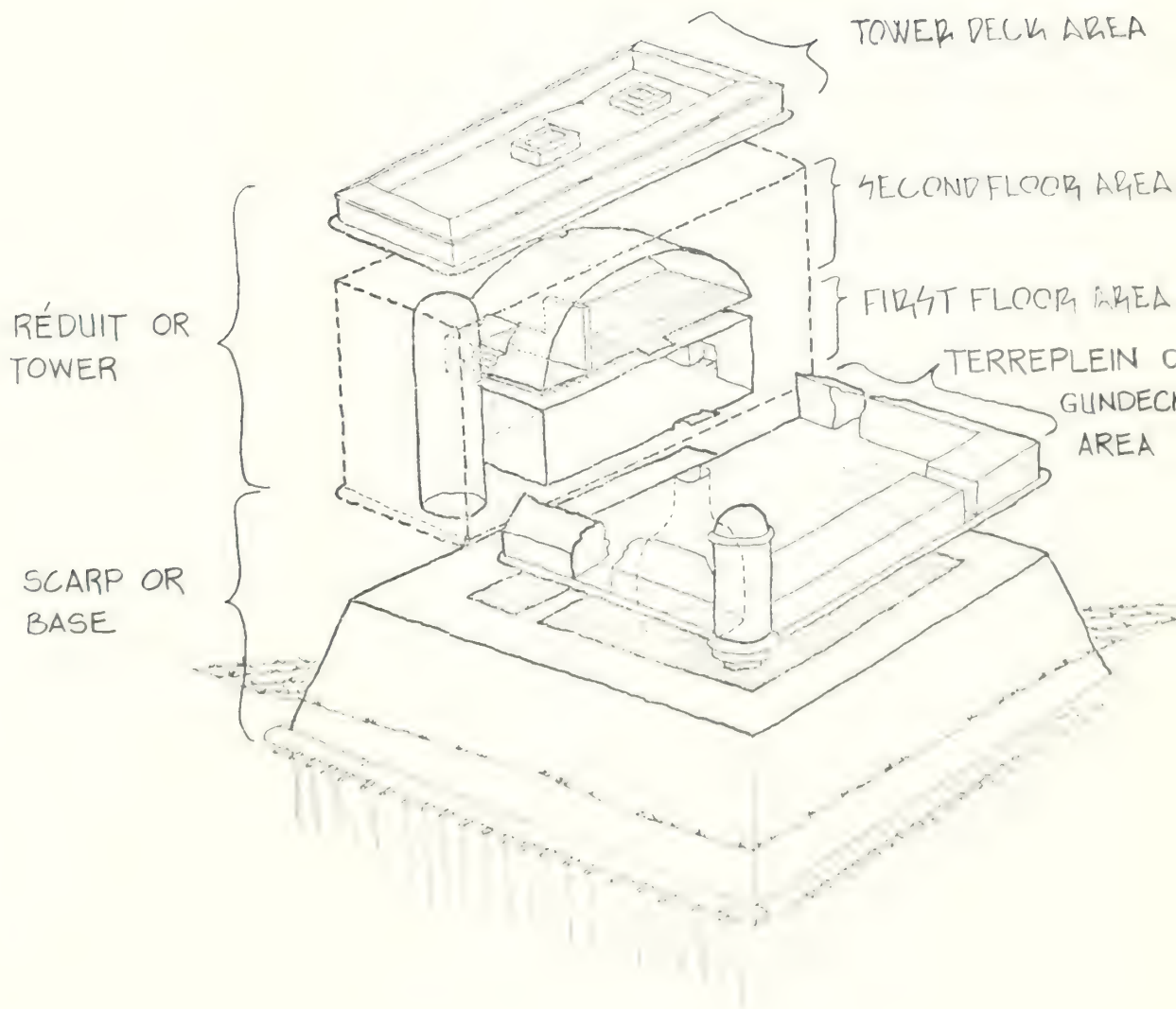


ILLUSTRATION 10
 MAJOR ORGANIZATIONAL COMPONENTS
 OF THE MATANZAS WATCHTOWER

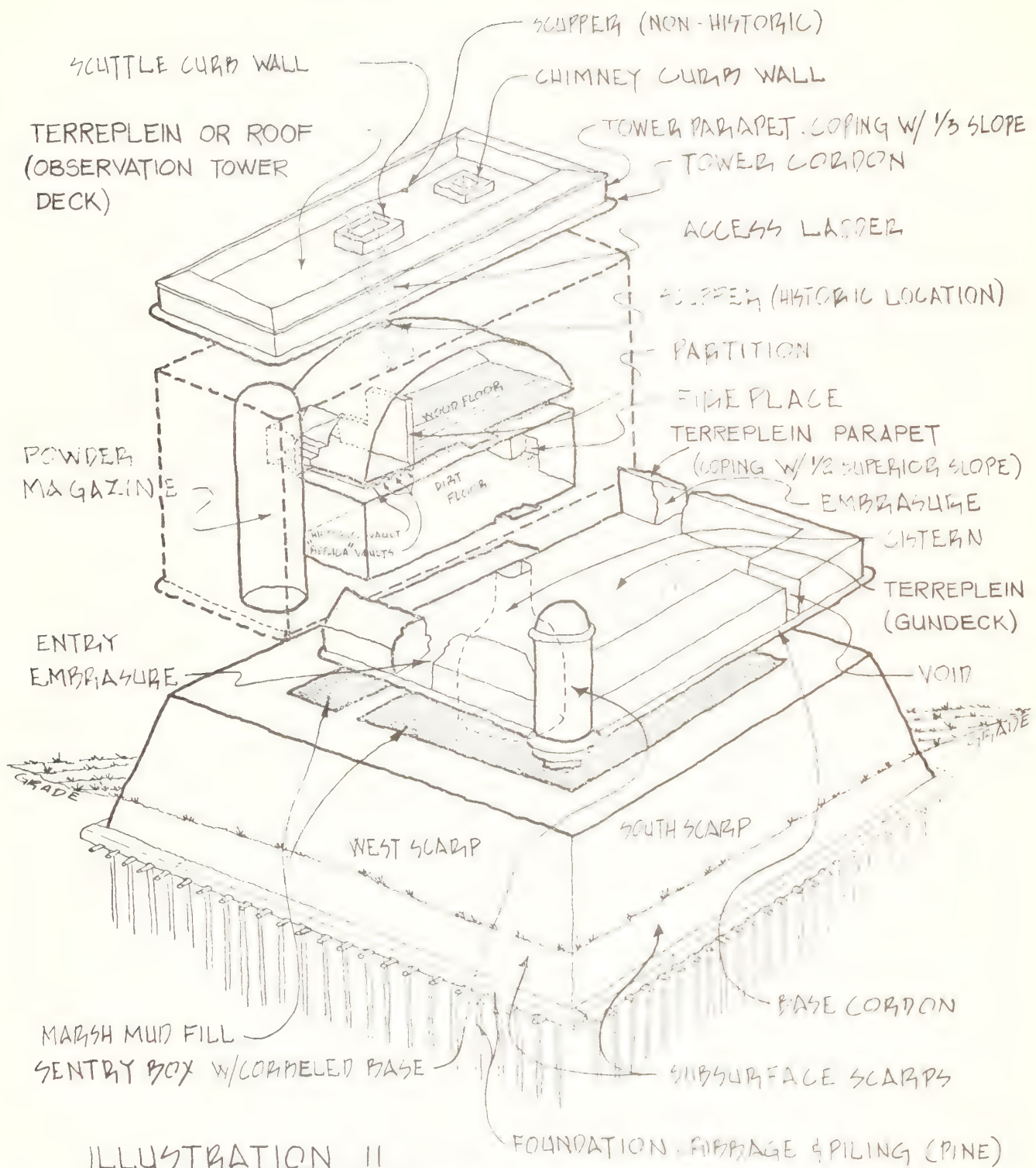


ILLUSTRATION II
EXISTING ARCHITECTURAL ELEMENTS FORT MATANZAS

To protect the vast and wealthy Central American territories of the Spanish Empire, a system of coastal fortifications throughout the New World was built in the sixteenth century. One of these was at St. Augustine, Florida, fortified as early as 1565. St. Augustine was well located; the citadel there commanded the entrance to the seaport and stood on a land form surrounded by water on three sides. In a supportive role, a perimeter system of fortifications, sentry towers and redoubts, was built at strategic locations of possible enemy approach, several miles distance from the military colony.

A vulnerable approach to the citadel position was Matanzas Inlet south of the colony. If an enemy ship could cross the bar into the Matanzas River at this point, it could confront the town at its southern end, or sail up the San Sebastian River and attack from the rear. Therefore starting as early as 1569 a succession of watchtowers or redoubts--fortified "extensions" of the main Castillo--was garrisoned at the Inlet. The last of these, the subject structure, was erected between 1740 and 1742 on Rattlesnake Island within cannon range of the Inlet.

The Matanzas installation of coquina was designed by Don Pedro Ruiz to accommodate a lookout/signal tower and six cannons which would slow down an enemy's attempt to flank the Castillo 15 miles up the Matanzas River. Although only occasionally involved in combat, the watchtower was nevertheless maintained for three quarters of a century by Spanish and British garrisons because of its strategic location. The building's design was straightforward and provided the necessary accommodations appropriate for a frontier post. It consisted of a massive coquina masonry scrap, roughly 50 feet square, rising to a terreplein 12 feet above the surrounding marsh (about 15 feet above mean sea level). Resting on this base across the northern third was a two-story réduit or tower containing quarters, supplies storage, kitchen and powder magazine. The roof of the réduit served as an observation platform, some 30 feet above the marsh, affording a panoramic view of the surrounding country including Matanzas Inlet, the backdoor to St. Augustine.

The historic form of the building is well illustrated in the 1843 drawings of Lt. Benham (Illus. 12). Although these drawings include later floor layers, lack detail, and indicate areas of severe deterioration, they depict the building as it existed in the first Spanish period. These drawings in conjunction with former park historian Albert Manucy's model combine to provide a good historic representation of Fort Matanzas. This model (Illustrations 13 and 14) based upon extensive research, was prepared in 1951 for interpretive purposes, and although not including the Benham data, it accurately illustrates Fort Matanzas of the 1742-63 period. The documentation for the model design may be found in park records as a memorandum to coordinating Superintendent, Southeast National Monuments dated March 28, 1951. Although some features are con-

Rever 128
Shed 17

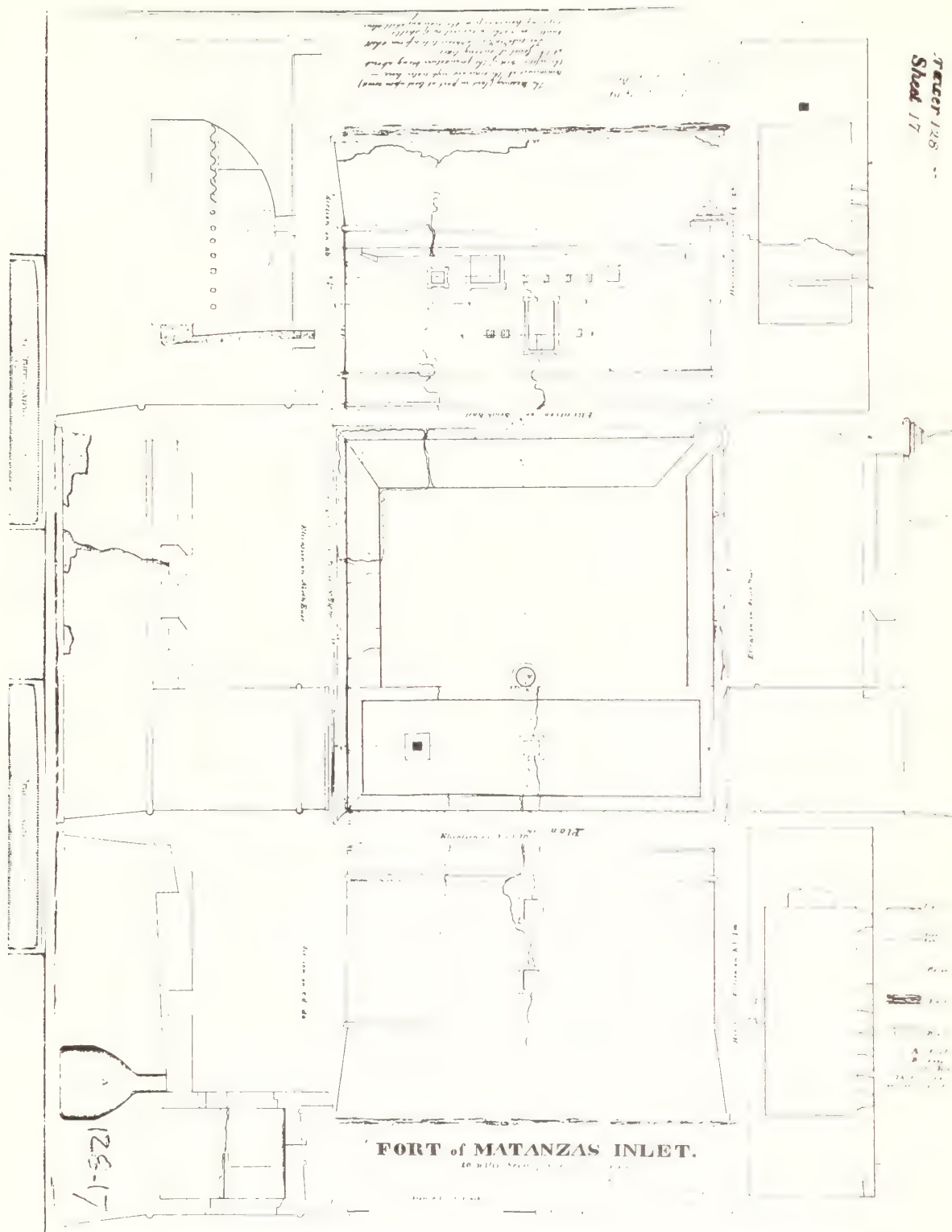


Illustration 12

"Fort of Matanzas Inlet," by Lt. H. W. Benham, 1843, National Archives

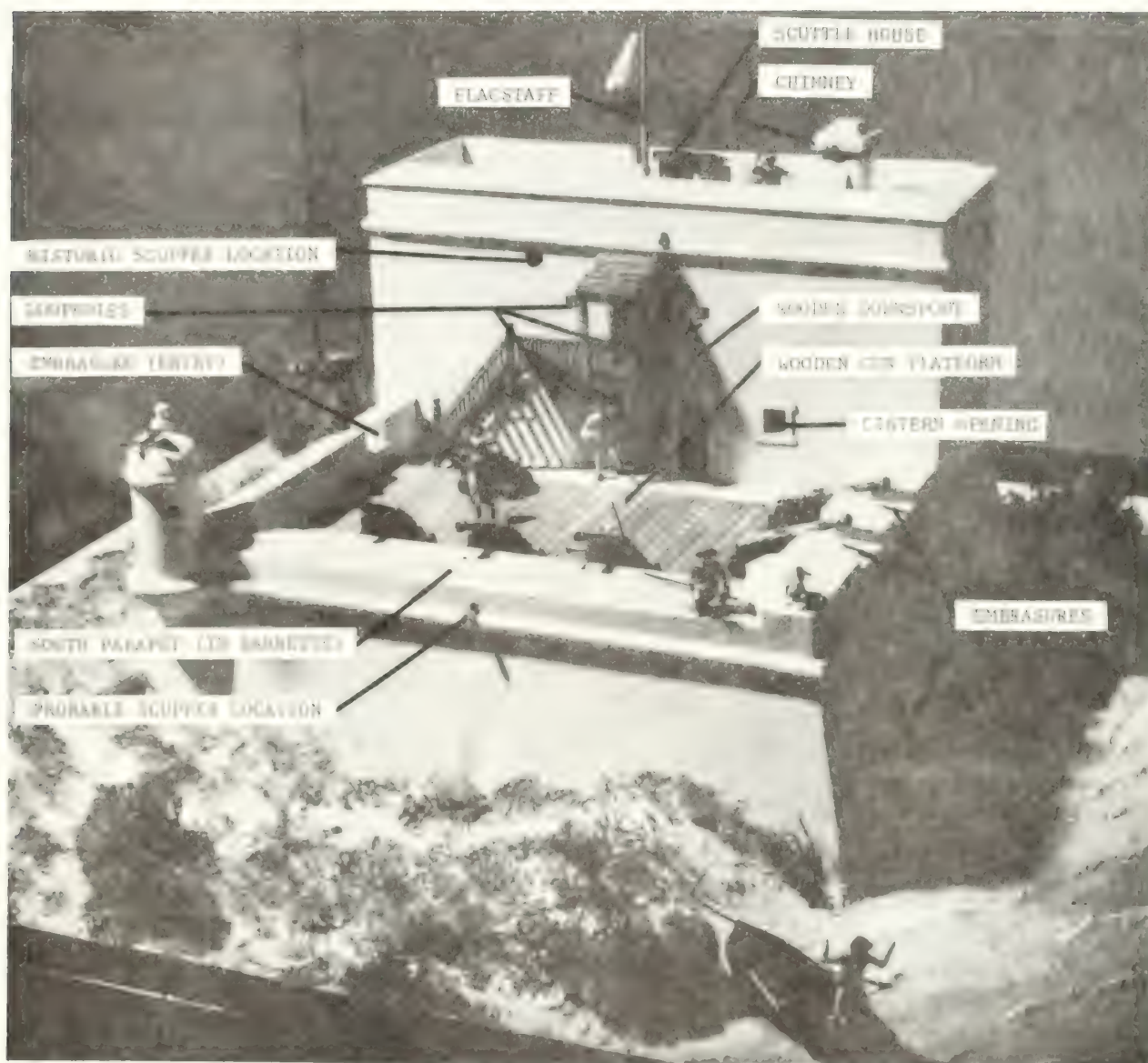


Illustration 13

U. Manucy Model, 1951, With Element Identification--South View
(Photo M-235)

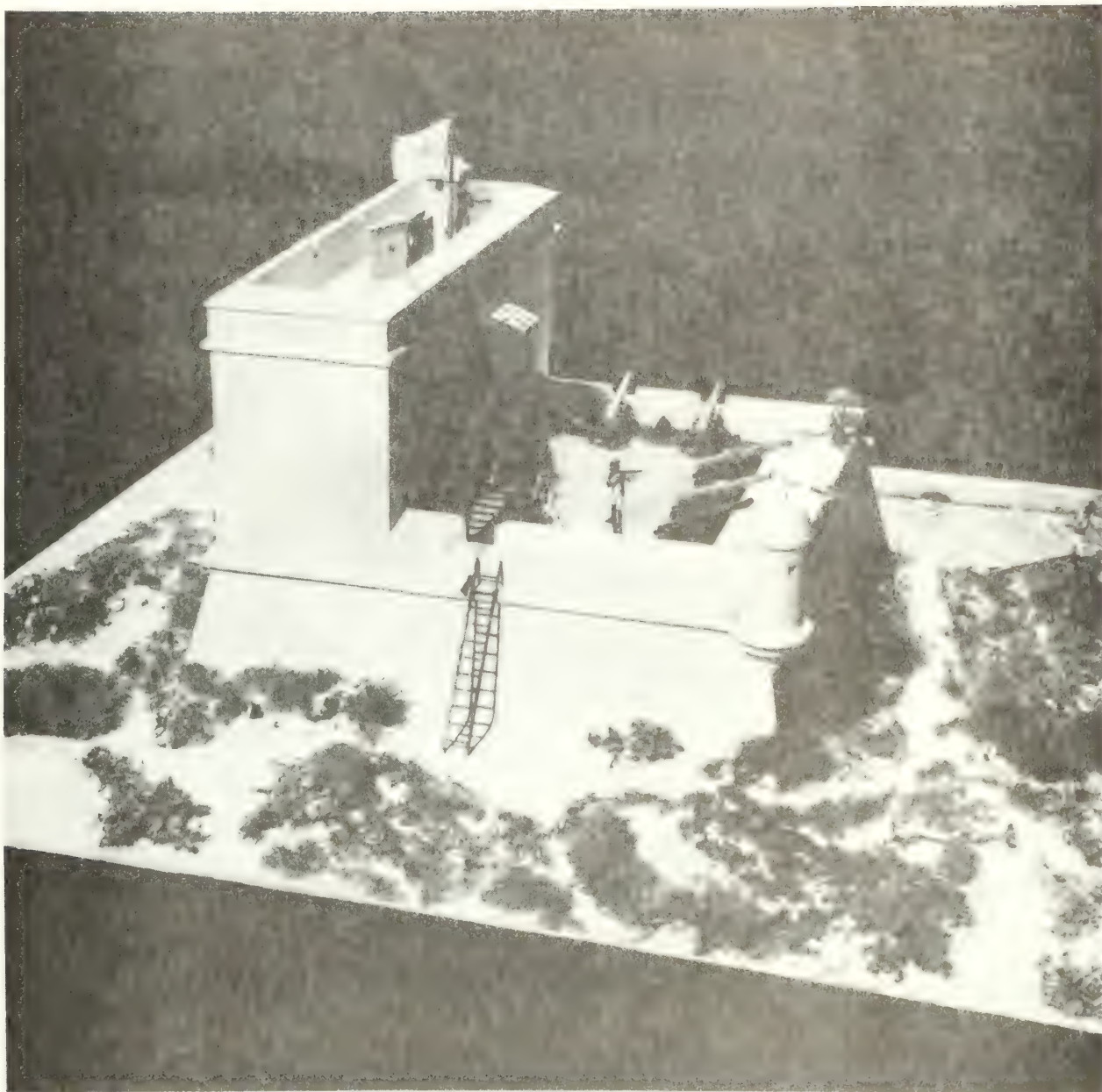


Illustration 14

A. Manucy Model, 1951--West View (Photo M-237)

jectural--scuttle house and chimney, for example--the overall design appears to be accurate with the following exceptions, based on the assumption of the accuracy of Benham's drawing:

One loophole was left out of the model because the Benham drawing of 1843 was not available in 1951. That drawing indicates a fourth loophole parallel to the existing three in the south wall of the first floor. The model indicates two musketry embrasures in the north parapet of the tower deck. These are based on Lt. Scriven's 1885 observations of the fort, but Scriven apparently mistook large shear cracks for embrasures which probably never existed.

Although a wooden gundeck platform was used at the fort during some periods of its occupation, during the 1742-63 period it was probably not necessary as the new tabby terreplein should have been sufficient. The number and location of drainage scuppers on the 1951 model are probably in error. Based on Benham's drawing and others at Castillo de San Marcos, scuppers were located below the cordon. The solitary tower deck scupper was located where the existing south face scupper is extant rather than centered above the cistern into which rainwater was fed. The location of the terreplein scuppers is yet unknown, however, based on current research, a single scupper may have been all that was originally provided.

The 1934 HABS drawings (Illus. D-24) and the "HSR Drawings - Existing Conditions", chapter F of this Section, are also useful in understanding the historic appearance.

B. Development/Study Package Proposal No. 104 - Discussion

a. Quote: "Repoint and Stabilize Fort Matanzas

Repointing Fort Matanzas is a recommended action; however, to repointing Fort Matanzas is a recommended action; however, to repoint both above and below grade would cost over half of the present budget. Repointing below grade is judged first priority. Some strategic above grade fabric repair is also recommended. However, most of the above grade fabric can await additional funding or in the meantime, the parks maintenance staff may continue its repointing program.

Fort Matanzas is structurally stable in the tentative sense that it has always been subject to an unstable site. The exception to this tentative stability is deterioration in tie rods and general erosion of coquina bearing wall systems. See below.

b. Quote: "Tie Rod Replacement"

Directly below the second floor are four east-west tie rods. These are placed in a structurally significant location (see Appendix J). They are badly deteriorated and it is first priority that they be replaced,

ideally in an unobtrusive location within a historically reconstructed second floor system.

At the tower deck level are two tie rods running east-west and five running north-south. The east-west rods are deteriorated but are not in a structurally significant location except as they aid the security of the east and west tower faces. Their replacement is not necessary at this time. Although deteriorated and exfoliating, their removal is unnecessary because they are causing no visible fabric damage.

The five north-south rods are in a similar state of decay. These, however, are structurally more important in the stability of the tower. The north and south faces of the tower are structurally less secure than the east and west faces so the tie rod replacement is, therefore, higher priority.

c. Quote: "Foundation Investigation with Corrective Measures as Necessary"

The foundation of Fort Matanzas was investigated and found to be submerged below the water table and thus perpetually saturated. In this case, the security of the immediate site is essential to the structural security of the foundation; a treatment partially accomplished with the 1937 bulkhead. Finishing the bulkhead on the north and west sides is recommended; however, because of funding limitations and the present level of stability, this becomes second priority.

It should be reiterated that treatment of sub-surface scraps will aid in the stabilization of the foundation as these walls are in effect extensions of the now submerged wooden system.

d. Quote: "Establish and Adjust Level of Terreplein"

The terreplein has been topped with coquina pavers and concrete since its Spanish occupation. The removal of this material is recommended because it leaks due to cracks, presents an unsightly and unsafe walking surface adds an unnecessary load to scarp walls and is at a non-historic level. However, these problems are not as severe as others, allowing this treatment to be judged second priority.

The observation tower terreplein also leaks and is also above historic grade due to twentieth century repair work. Because it will be necessary to remove much of it in order to facilitate tie rod replacement, the opportunity to reinstall it will solve other problems. Reestablished at historic grade, the new roof deck will be waterproofed and designed to carry rainwater to a single scupper in the historic manner. Removal of some fill to establish grade will reduce the load on the supporting vault. Because of the combination of problems involved, replacing the observation tower roof deck is first priority.

- e. Quote: "Complete Shore Stabilization on North and East Sides on Rattlesnake Island"

Because the security of the fort site is essential to the structural integrity of the building, shore protection if necessary would be first priority. Although evidence exists indicating that the Rattlesnake Island shoreline east and north of the Fort is dynamic, data is insufficient to conclude that treatments are necessary at this time. Further study, however, is highly recommended.

- f. Stabilization elements not identified by the Development/ Study Package Proposal

In the course of architectural investigations and because of treatment recommendations, several additional stabilization elements have been identified.

1. Sentry box base: The reconstruction of the sentry box in 1929 was stabilized by using iron support brackets. These have deteriorated badly, and their exfoliation has resulted in the dislodging of base stones. To once again stabilize the sentry box, this iron should be removed and carbed base stones re-installed.
2. Wooden floor system: Two thirds of the second floor was reconstructed in 1939. The wooden joist and plank system installed, poorly resembles the historic tably vault system and is deteriorated. The result of insect damage, rot and broken masonry joist pockets leads to the recommendation that at least part of this floor should be replaced. Accomplishing proper repair to this floor in conjunction with adjacent tie rod replacement is first priority. See discussion Bb. above.
3. Entry stairs: No entry stairs existed historically, a ladder was used. However, in 1940 a wooden stair was installed to permit visitor access. This stair is in fair condition except for several treads which are rotted and unstable. To facilitate the repointing of below grade masonry, this stair will have to be removed. It is recommended that a new less obtrusive stair be designed and installed to replace the existing.
4. Second floor stair: This wooden stair was erected in 1940 and will have to be removed to facilitate terreplein treatments. A replacement stair will be necessary and it is recommended that the new design be more historically

sensitive and avoid opportunities for visitor impact on adjacent masonry fabric.

5. Void in south parapet: A two foot wide void was left in the south parapet of the terreplein during its 1924 reconstruction to permit a stair for visitor access. Not used since about 1936, this void presents an obvious safety concern and it is highly recommended to fill it with masonry to match existing.

C. Package No. 104 Recommended Treatments

The current development package has neither the intent nor the funding for a total stabilization package; the total scope of needed work is estimated to cost between \$267,000 and \$334,000 almost double the available funds. Based on the directives of Development/Study Package Proposal No. 104 and the resulting field investigation the following items have been determined to have the highest priority and are achievable within the available funding. (A Summary of Future Treatment Recommendations may be found in Appendix F.)

Treatment Recommendations, 1st Priority

Work Element	Estimated Cost
a. Protection of east shore of site salvage (redress) groins	\$3,000
b. Stabilization of sub-surface masonry fabric	
(1) Site preparation and excavation: to foundation level	10,000
(2) Masonry repair: repointing and replacement of missing stones and/or remove and rebuild face wythe masonry to foundation level	15,000
(3) Backfilling and landscaping to foundation level	5,000
(4) Replace entrance stair subtotal	<u>2,000</u> 32,000
c. Stabilization of above-grade masonry fabric	
(1) Removal of visible iron and replacement of corbeled base in sentry box	2,000
(2) Other repair and repointing of fort to be accomplished if funding permits	

d.	Stabilization of observation tower	
(1)	second floor system	
(a)	removal of four (4) tie rods and masonry repair	2,000
(b)	installation of new tie rods with plastic sleeves	3,000
(c)	removal of wooden floor	1,500
(d)	reconstruction of joist pockets	2,000
(e)	installation of hewn cypress joists and concrete-tabby vaulted floor system	<u>13,000</u>
	subtotal - replace tie rods and restore historical floor system	20,500
(2)	tower deck system	
(a)	remove tower deck & fill	2,500
(b)	remove five (5) north-south tie rods	1,000
(c)	shape/grade fill, remove north scupper and repair parapet	1,500
(d)	replace north-south tie rods including plastic sleeves and masonry repair	3,500
(e)	install water impervious roof membrane	2,000
(f)	install concrete-tabby deck	6,000
(g)	reconstruct wooden downspout	500
	subtotal	<u>17,000</u>
e.	Stabilization of terreplein	
(1)	remove non-historic concrete layers	10,000
(2)	shaping/grading slope	2,000
(3)	install new scupper and fill void in south parapet and repair embrasure openings	1,500
(4)	install water impervious membrane	3,000
(5)	install new concrete-tabby deck	8,000
(6)	new stair to second floor	<u>2,500</u>
	subtotal	<u>27,000</u>
Summary		
a.	shore stabilization	3,000
b.	sub-surface masonry stabilization	30,000
c.	sentry box stabilization	2,000
d.	stabilization of observation tower	37,500
e.	stabilization of terreplein and parapet/embrasure repair	<u>27,000</u>
	all priority 1 treatments	\$99,500
	mobilization of contractor	<u>48,700</u>
	project total	\$148,200

D. Summary of Existing Conditions And Problems

The stabilization/preservation needs of Fort Matanzas center around four basic issues -- the natural dynamics of the site, the coquina fabric, inappropriate repairs, and the impacts of visitation. Rattlesnake Island has proved to be a hostile site since the fort's initial construction, and although National Park Service shore protection efforts have largely arrested continual impact of the Matanzas River, the effort is incomplete and only partially effective against periodic storm induced wave action. Secondly, coquina is a comparatively vulnerable stone when subjected to mechanical forces, and despite being in a generally stable condition, surface erosion does exist, and in turn has created its own set of problems. The third stabilization problem at Fort Matanzas stems from the use of inappropriate materials utilized in early twentieth century preservation efforts. By reinforcing certain architectural elements with inappropriate materials, new problems have been inadvertently introduced. A fourth cause of the current situation at the Matanzas Monument is visitation. Some 35,000 annual visitors introduce egress and safety concerns as well as contribute a sizable mechanical load to the structure and fabric of the building.

The recommended treatments are by Directive 10-238 Development/Study Package 104 aimed at the essential stabilization necessary to preserve the historic structure and its architectural form. Any treatment beyond the immediate preservation requirements should be addressed in the future.

Within the scope of the recommendations included below are actions necessary to bring about the structural security of Fort Matanzas and its site and to arrest the decay of architectural fabrics to a point that can be managed by a program of cyclic maintenance. However, because of funding limitations only part of the recommendations can be enacted under the present package.

A recommendation is made that a well funded program of cyclic maintenance be established to keep pace with the natural and inevitable deterioration of shore protective features and architectural fabric. Such a program could be outlined in a Historic Structure Preservation Guide, which should be prepared for the park by appropriate professionals.

Three sub-chapters follow, each providing a summary of conditions and problems within three categories: (1) the site, (2) the masonry fabric, and (3) the structural systems of Fort Matanzas. Additional architectural discussion may be found in Appendix E.

1. Site

a. Summary

Rattlesnake Island on which Fort Matanzas is located is a dynamic predominantly marshy land form. The immediate fort site consists of a built-up area varying in elevation between four feet and six feet above mean sea level (MSL). Rattlesnake Island is protected from the Atlantic Ocean by Anastasia Island, which acts as a barrier island, although the latter is much larger in size. The two islands are separated by the Matanzas River, which in effect is an arm of the ocean. The river is subjected to tidal flow through the Matanzas Inlet (Illus. 15).

The configuration of Rattlesnake Island has increased in size since the earliest available survey in 1765, due to both man-made and natural processes. (Illus. 16) Man-made processes consist mainly of construction and dredging of the Intracoastal Waterway (originated as the Florida East Coast Canal in 1883) west of the island. Natural processes are in part, the result of changes in the Matanzas Inlet area, approximately 4,000 feet south of the fort which have a direct effect on the Matanzas River running east of Rattlesnake Island. (For a more detailed history of Rattlesnake Island see "Historical Resource Management Plan," Fort Matanzas National Monument, August 1977.) Because of these varying conditions, together with adverse weather conditions, Fort Matanzas has been periodically subjected to high tides around its base. This has caused deterioration of the coquina fabric and foundation as well as erosion of the surrounding land.

Presently, even though the site is still subjected to abnormally high tides which rise to the base of the fort at least once each year (Illus. 17) various shore protection projects have partially stabilized the land in the vicinity of the fort. In some instances these measures, although incremental, have performed very effectively. However, they have created an undesirable visual impact on the historic scene, and more important have not dealt with the total erosion problem.

There is much conjecture involved in determining the shoreline erosion problem at Rattlesnake Island due to a lack of documentation. Past shore protection measures have partially stabilized the Fort Matanzas site although some of these measures are now in a deteriorated condition. The only known erosion problem is that associated with the northeast storms which are also usually the most damaging (hurricanes are the exception). This is due to the high tides and waves over a large area caused by storms of an



Illustration 15

Aerial Photograph of Rattlesnake Island and Matanzas Inlet Area

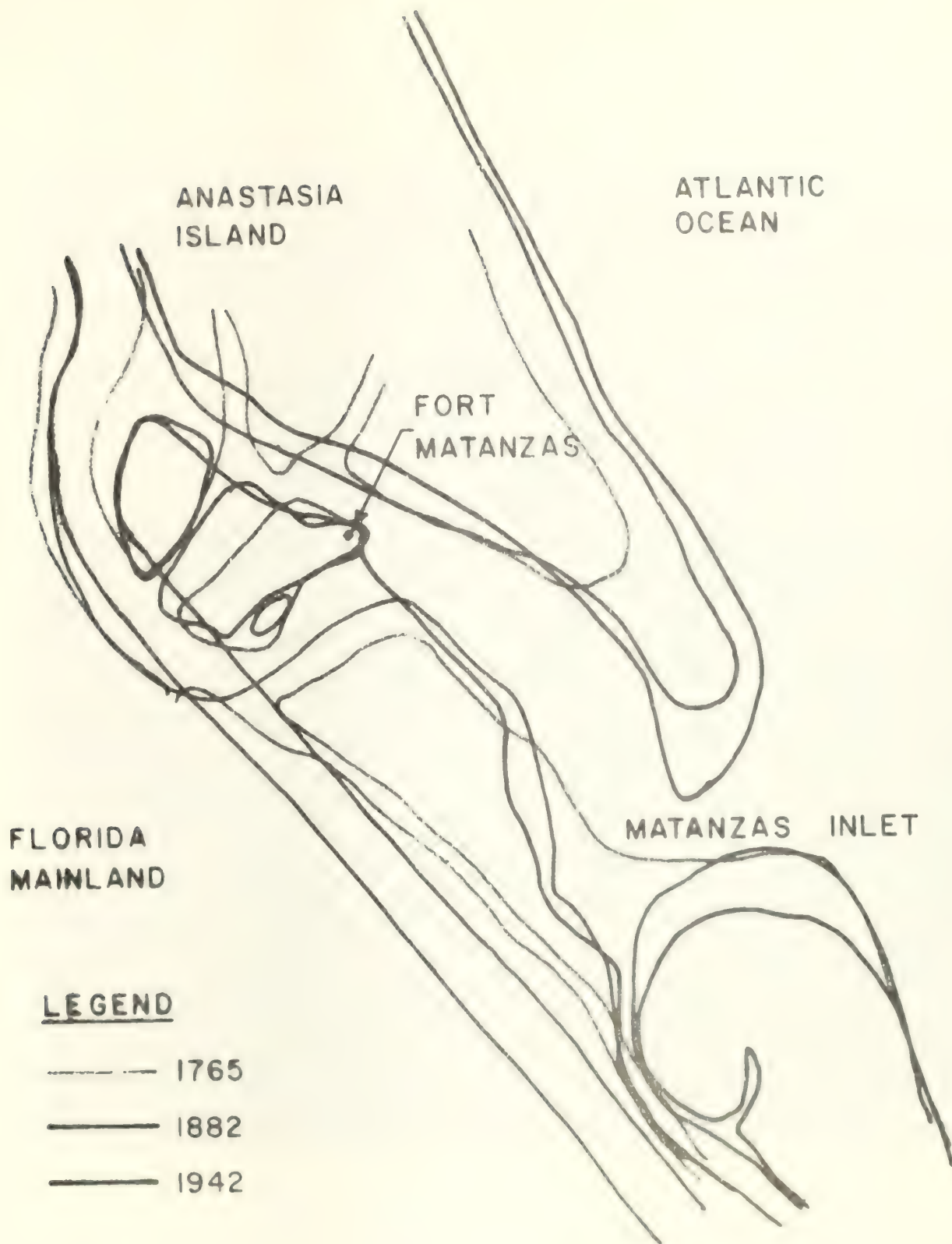


ILLUSTRATION 16

SHORELINE TRANSFORMATION



Illustration 17

Fort Matanzas During Storm High Tide, November 3, 1978.

abnormally long duration. Some shore recession may occur along the unprotected portions of the east shoreline, when the pre-dominant southeasterly winds cause unusually high waves. This is offset to some degree by deposition of littoral drift at other times. Because no thorough investigation has been initiated to determine the long-term rates of supply and loss, the overall stability of the Rattlesnake Island shoreline is unknown.

However, there is some room for concern because of a recent U.S. Army Corps of Engineers project which consisted of reconstruction of the dike west of Matanzas Inlet, between the two major sections of Rattlesnake Island, in 1976-1977. This area was breached during Hurricane Dora in 1964, resulting in turbulence in the Intracoastal Waterway west of Rattlesnake Island, as well as erosion of surrounding land. The original dike, which connected the northern and southern sections of Rattlesnake Island, was constructed in 1934-1935, and immediately thereafter substantial erosion occurred on both sides of the Matanzas River due to increased water flow. A District Corps of Engineers study in November 1935 recommended shore protection treatments to both Rattlesnake and Anastasia Islands to combat this problem. Although a 1,200-foot groin field was eventually constructed on the Anastasia Island side of the river, only a stabilization project at the Fort Matanzas site of the Rattlesnake Island side was performed. During the breakthrough period of 1964-1976, many shoals appeared in the Matanzas River as a result of a decreased tidal prism. Accretion of sand on Rattlesnake Island probably occurred during this period, or at least the rate of erosion was slowed considerably. After the reconstruction of the dike in 1976-1977, the shore returned to the 1935-1964 phenomena, characterized by larger tidal prisms and higher tides, with a definite possibility of increased erosion at the unprotected shoreline of Rattlesnake Island.

Following the completion of the dike reconstruction, the Corps of Engineers authorized the Department of Coastal and Oceanographic Engineering of the University of Florida to perform a monitoring study of the Matanzas closure. The first annual report was published in November 1977 and the second and final report is to be completed sometime in January 1979. Figures in the first annual report show that 80% of the prism through the Matanzas Inlet now flows into the north arm of the Matanzas River versus only 26% which occurred prior to the closure (Illus. 18). However, the report makes no mention of any changes in either the Rattlesnake Island or Anastasia Island shorelines of the Matanzas River. Hopefully, this specific area will be addressed in the final report. If not adequately addressed, it is strongly recommended

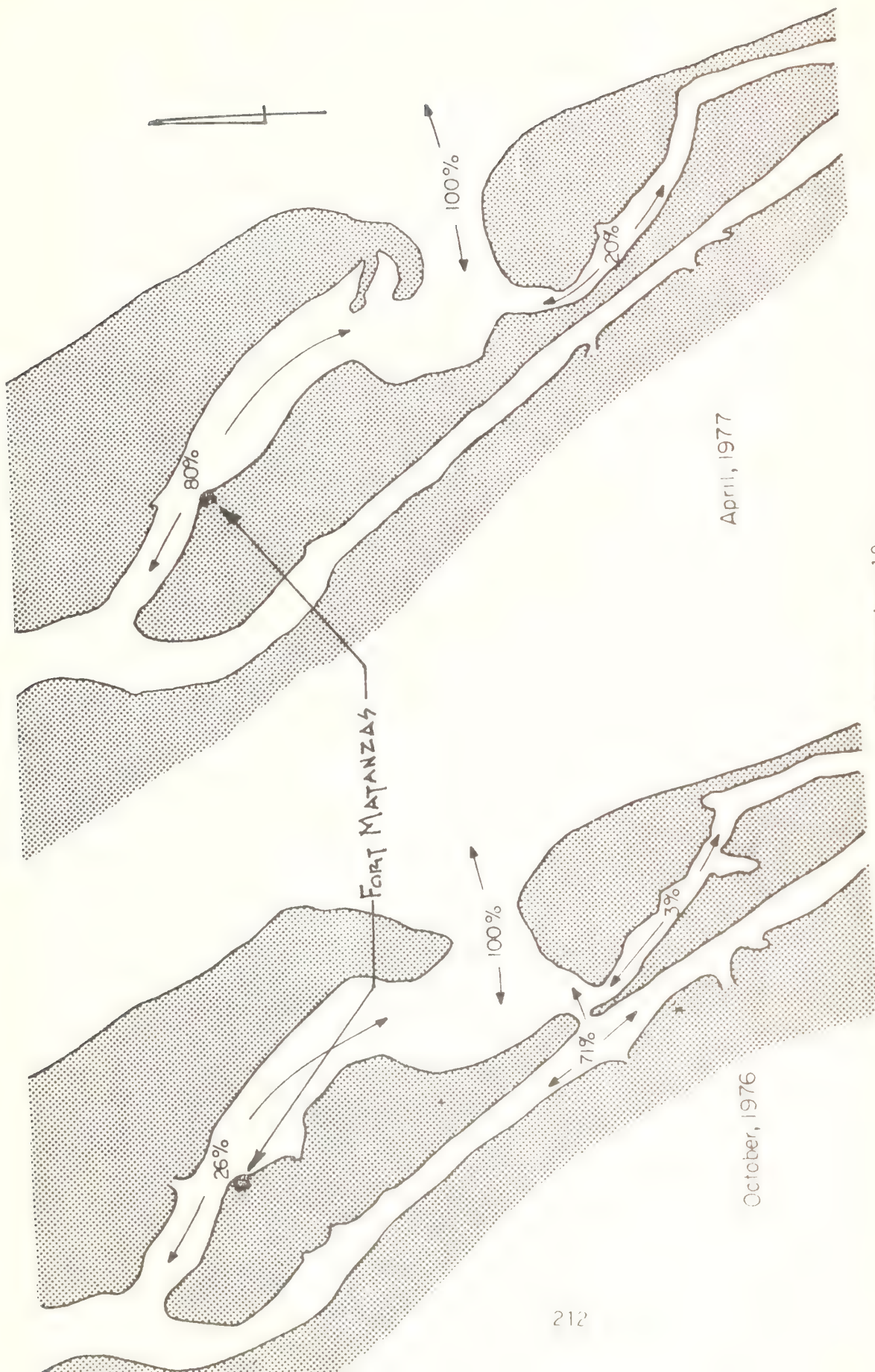


Illustration 18

Percent Distribution of Ebb Tidal Prism Before Closure (October 1976) and After Closure (April 1977). From Monitoring (Performance) Study by J. D. M. Shennard.

that some investigation and monitoring of both sides of the Matanzas River shore be performed to determine the stability of Rattlesnake Island.

In the meantime, to prevent the loss of existing shore protective features, it is suggested that the rubble mound groins north of the fort be redressed.

2. Masonry Fabric

a. Summary

What presently stands at the Matanzas Inlet is an edifice of coquina masonry little more than a structural shell. The Monument has few architectural details, and much of its architectural fabrics as well as furnishings and hardware are no longer existing.

Coquina is a soft and immature limestone composed of shells or shell fragments cemented together over time through calcium solidification into a porous rock material. The original source of the stone used at Fort Matanzas was probably a quarry at nearby El Penon within present day Summerhaven. Quarried in stratigraphic layers, the stone was then cut to the desired size and shipped to the site. Stones used at Fort Matanzas vary in size with few visible stones exceeding 30 inches by 16 inches and 12 inches in thickness. The stones were laid-up in a random course with a lime mortar derived from processing widely abundant oyster shells with a mix ratio of approximately two parts lime to one part sand. The same source of lime was used for the lime plaster coating (seven parts lime to five parts sand) which originally covered the fort both interior and exterior.

Coquina is a coarsely grained stone with definite moisture content weathering properties. Although the "moisture equilibrium" is not known, phenomena at the moisture extremes are. A very absorptive material, coquina has a much higher abrasion resistance when wet than when dry. When dry, the surface shell fragments become isolated, brittle and capable of flaking away; when moist, the fragments bond themselves together to form a dense and cohesive material. Rudimentary tests reveal that the stone when oven dry absorbs water up to 20% of its weight very rapidly, indicating an extremely high capillary potential. As the lower foundation of Fort Matanzas is continually submerged in water, a high moisture content is assumed to be present in the stone. The vertical extent of the capillary movement has not been determined and is difficult to ascertain due to the many sources of moisture passing into the material. This capillary

movement is believed to be beneficial as it aids in the stone's cohesiveness although extremes to this moisture intake should be avoided where possible. An innate protective feature of coquina is its natural formation of a grayish patina. This patina appears to be harder than the freshly cut stone and takes several decades to reform when displaced.

Deterioration of historic masonry--coquina and lime plaster and mortar--varies depending upon location within the Fort. In general, although the stonework is very coarse and irregular in areas as a whole it is structurally stable and intact. In areas that have been exposed to direct surface water movement, the stone exhibits surface scouring. This is most noticeable along lower scrap walls facing the river (Illus. 19 and 20) as well as below present grade which was once exposed to the scouring action of the river. Similar problems in addition to vegetative growth are noticeable near the scuppers. (Illus. 21)

Other weathering forces include exposure to wind and airborne particles and exposure to human contact. The original plaster coating provided protection from these forces, but with the exception of small isolated areas, this protective coating is long since gone.

Weathering of the parapet walls has made the original superior slope almost indistinguishable, except near the tower's south face where they are protected from much of the weathering forces. The embrasures and areas of the parapet copings are highly eroded and in need of repair. The terreplein parapet coping has received periodic pargeting. The surfacing is cracked, allowing increased water penetration into the stone fabric.

Non-historic masonry is also in need of preservation. This includes the portland cement mortar used in 20th Century repair work and concrete usage for the terreplein and tower deck. The problems associated with the use of portland cement are due to its hardness and incompatible expansion/contraction properties. In areas where cement mortar was used in repointing as well as in reconstruction work, this material has hastened the deterioration of adjacent coquina fabric. Subsequent weathering of the stone has left cement "ledges" which collect water and accelerate the problem (Illus. 19 and 20). As used for the surface of both the terreplein and réduit deck, no expansion joints were installed and cracks have developed throughout, more noted on the lower than the tower deck. Many of the gundeck's cracks are associated with the settlement of the fill within the southeast corner, although cracks have developed over the entire area (Illus. 23). In addition



Illustration 19

Detail of South Scarp Erosion



Illustration 20

Detail of East Scarp Erosion

Weathering due to exposure to wave actions.



Illustration 21

Detail of North Face Under Non-Historic Scupper

Vegetation growth on the fabric results from the water run off from the roof. Historically, water was drained through a single scupper and wooden downspout on the south face to the cistern. Note missing cordon stone to left of scupper.



Illustration 22

Detail of Subgrade Scarp at Southwest Corner (South Salient)



Illustration 23

Detail of Terreplein

The non-historic concrete layers of the terreplein are cracked allowing water to seep into the fill below and pose aesthetic and safety concerns.

to possible safety and maintenance concerns, this condition also allows for penetration of water into the fill below.

Investigations below grade around the base of the fort scrap wall (Appendix H, Foundation Investigation, 1978) have exposed areas of missing stone and leached mortar (Illus. 22). This situation is undesirable although the predictable above grade cracks and shear failures have not developed.

3. Structural Systems

a. Summary

The structural system of Fort Matanzas is a rectangular pattern of masonry bearing walls. The square base contains marsh mud fill to a level which forms the first floor and terreplein. Above the base, bearing walls of coquina rise to form the réduit.

The réduit includes a vault spanning east-west, springing from massive coquina cavity walls at the second floor line and structurally independent of the north and south tower walls. Atop the vault is additional fill, leveled to form the réduit deck or roof of the fort. At the foundation level the masonry rests upon a wooden cribbage supported on pine pilings and packed with an oyster shell-lime mattress. The success of such a construction approach is dependent upon the stability of the site to support many tons of masonry and fill material.

The structural failure of the building in the 19th Century can be attributed to the destabilization of the site due to wave erosion and subsequent undermining. The security of the vault was dependent upon the stability of the wall buttresses. As these buttress walls settled due to undermining, the spreading of the vault split the réduit down the middle. Additional undermining resulted in the shear failure of the east salient.

In the early 20th Century, arresting the undermining process became essential in order to reestablish the integrity of the tower and its elliptical vault. The installation of the steel sheet bulkhead around two sides of the fort in 1937 may be the single most important stabilization treatment ever undertaken. This action restrains the soil immediately at the foot of the structure, holds the scarps in place and prevents undermining.

Additional repair work performed in the early 20th Century introduced several new materials to the fort fabric, inappropriate materials which have subsequently created their own set of

preservation problems. In addition to the previously mentioned portland cement, this primarily consists of steel used as structural reinforcing. Two sets of tower tie rods were installed: the lower east-west set visible in the first floor of the tower, and a second set running both east-west and north-south imbedded in the fill material above the vault and below the tower deck. The rod end plates have exfoliated to the point of dislodging facing stones and making the structural integrity of the rod-and-plate system questionable. The dislodging is most noted on the west face of the fort at the lower set of rods where the entire facing stone course has been displaced (Illus. 24). In certain areas, these rods are eroded to half their original size. In other areas, the exfoliation has doubled their size. The upper set of rods has been exposed for inspection, revealing a high degree of exfoliation (Illus. 25).

Similar problems exist with the sentry box. During the 1929 reconstruction, steel was introduced as reinforcing for both the corbeled base and the stone coursing. The base metal exhibits advanced exfoliation, which has caused the masonry base to fall from the fort (Illus. 26). A steel ring was placed at the bottom of the domed cap which has subsequently been lifted due to expansion of the metal. This metal deterioration is also evident above the cordon where expanded metal and discoloration is visible. In time, all of the steel imbedded within the sentry box masonry can be expected to exfoliate to a point requiring remedial attention.

Another structural problem exists in the floor system of the tower second floor. This non-historic floor is presently sound except for decay in two or three of the supporting joists (Illus. 27). As the wooden planks have decayed due to water coming from the leading vault and room apertures, they have been replaced by the park. However, the timber joists which are mounted in masonry pockets are in some cases decayed and more difficult to replace as part of cyclic maintenance.

E. Additional Studies and Observations

There are questions concerning visitor access and safety which require additional investigation. The manner by which visitors are allowed to reach the summit of Fort Matanzas, unescorted, is both part of the exciting positive quality of this Monument and a safety factor worthy of attention. It is recommended that the implications connected with this hazard be investigated by the proper authorities within the National Park Service. It is further suggested that, at the very least, the visitors to Fort Matanzas be completely forewarned concerning this and other hazardous features, such as abrasive coquina, rattlesnakes, etc. This



Illustration 24

Detail of West Réduit Face

Notice the courses of the face stones covering the tie rod and plates, particularly the lower which is being dislodged due to the plate exfoliation. The upper course appears intact although the same forces that caused the lower steel plate to exfoliate are at work on the upper set as well as the east face, and in time could cause similar problems.



Illustration 25

Detail of Tie Rods Under R duit Deck



Illustration 26

Detail of Sentry Box Base

Notice exfoliated iron.

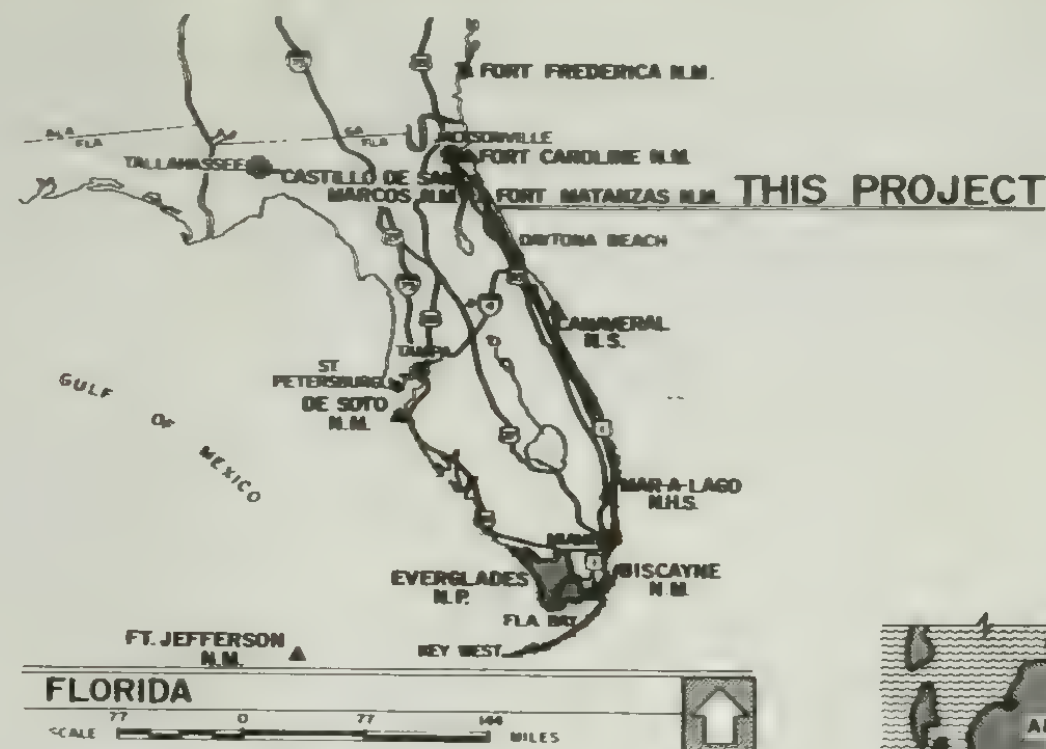


Illustration 27

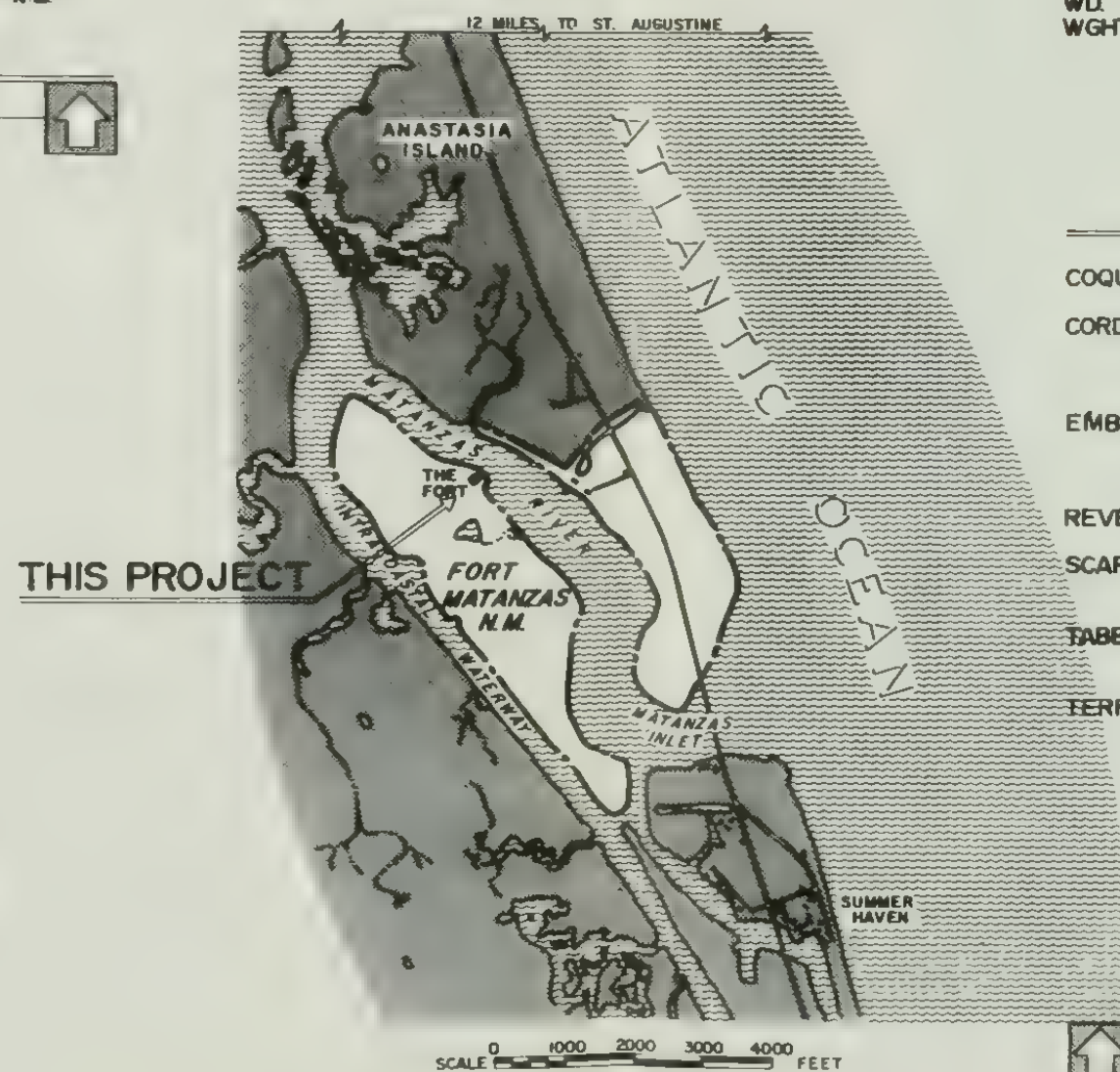
Detail of Decayed Second Floor Joist

Historic Structure Report Drawings

Sheets 1-6	Existing Conditions
Sheets 7-10	Recommended Demolition Work
Sheets 11-15	Proposed Preservation Work



LOCATION MAP



VICINITY MAP

ABBREVIATIONS

APPX. (APPROX.)	- Approximately
CONC.	- Concrete
CONST.	- Construction
COQ.	- Coquina
DET. DETL.	- Detail
DN. (DOWN)	- Down
ELEV.	- Elevation
EXIST.	- Existing
FL.	- Floor
GALV.	- Galvanized
HIST.	- Historic
LT. WT.	- Light Weight
MAX.	- Maximum
O.C.	- On center
P.V.C.	- Polyvinyl chloride
REQD.	- Required
SPEC.	- Specified
ST. STN.	- Stone
TERR.	- Terreplein
TYPL. TYP.	- Typical
WD.	- Wood
WGHT. WT.	- Weight

DEFINITIONS

COQUINA	- a locally available shell stone
CORDON	- the ornamental projecting course of stone below the parapet.
EMBRASURE	- an opening in the parapet through which cannons may be fired
REVTMENT	- a retaining wall.
SCARP	- the battered main walls of the fort.
TABBY	- a concrete using shell as aggregate.
TERREPLEIN	- the horizontal surface in rear of a parapet on which cannon may be placed

DRAWING INDEX

SHEET NO.	SHEET TITLE
1	COVER SHEET
2	SITE PLAN
3	FLOOR PLANS
4	ELEVATIONS & DOOR DETAILS
5	ELEVATIONS & WINDOW DETAILS
6	SECTIONS
7	FLOOR PLANS
8	ELEVATIONS
9	ELEVATIONS
10	SECTIONS
11	SITE DETAIL
12	FLOOR PLANS
13	SECTION & DETAILS
14	SECTION & DETAILS
15	DETAILS

SYMBOLS

	BRICK (clay tile)
	CONCRETE (tabby)
	COQUINA & COQUINA RUBBLE
	COQUINA GRAVEL FILL
	COQUINA RUBBLE/RIPRAP
	EARTH, MASH MUD, SAND, SHELL FILL
	MAINTAINED LAWN
	MARSH GRASS
	NEW WORK (MASONRY REPAIR)
	OYSTER SHELL
	PLASTER
	STEEL
	WOOD
	WOOD
	DETAIL NUMBER
	SHEET NUMBER WHERE DETAIL IS DRAWN

HISTORIC STRUCTURE REPORT DRAWINGS

HISTORIC PRESERVATION	PREPARED FRAZIER COPELAND DESIGNED C. F. HALL DRAWN Lo FLEUR CHECKED JUNE 1979 DATE	DRAWING STABILIZATION OF FORT MATANZAS LOCATION WITHIN PARK NAME OF PARK FORT MATANZAS NATIONAL MONUMENT SOUTHEAST REGION ST. JOHNS COUNTY FLORIDA STATE	DRAWING NO. 347 28,000 PCIP SHEET 104 1 OF 15
-----------------------	---	---	---

DRAWINGS BASED ON INFORMATION AVAILABLE AS OF JULY 1979. SEE COMPLETION REPORT ON 7-13-79. ACTION COM-PLAC CX-5000-9-9019 FOR INFORMATION ON NEW DATA FOUND DURING CONSTRUCTION

FORT MATANZAS NATIONAL MONUMENT



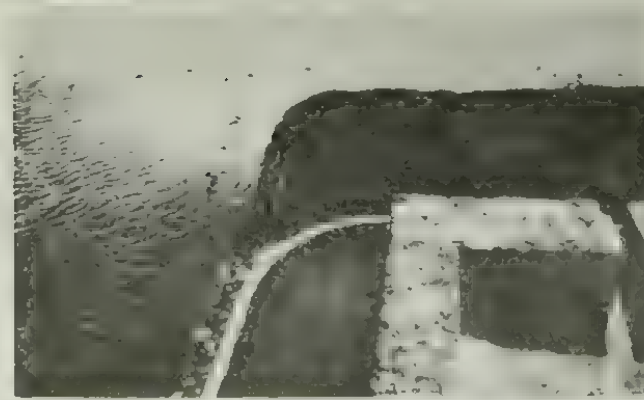
① FORT & SHORELINE



② VISITOR ENTRANCE & NORTH MIDDEN



③ 1966 GROIN/REVETMENT & SANDBAR



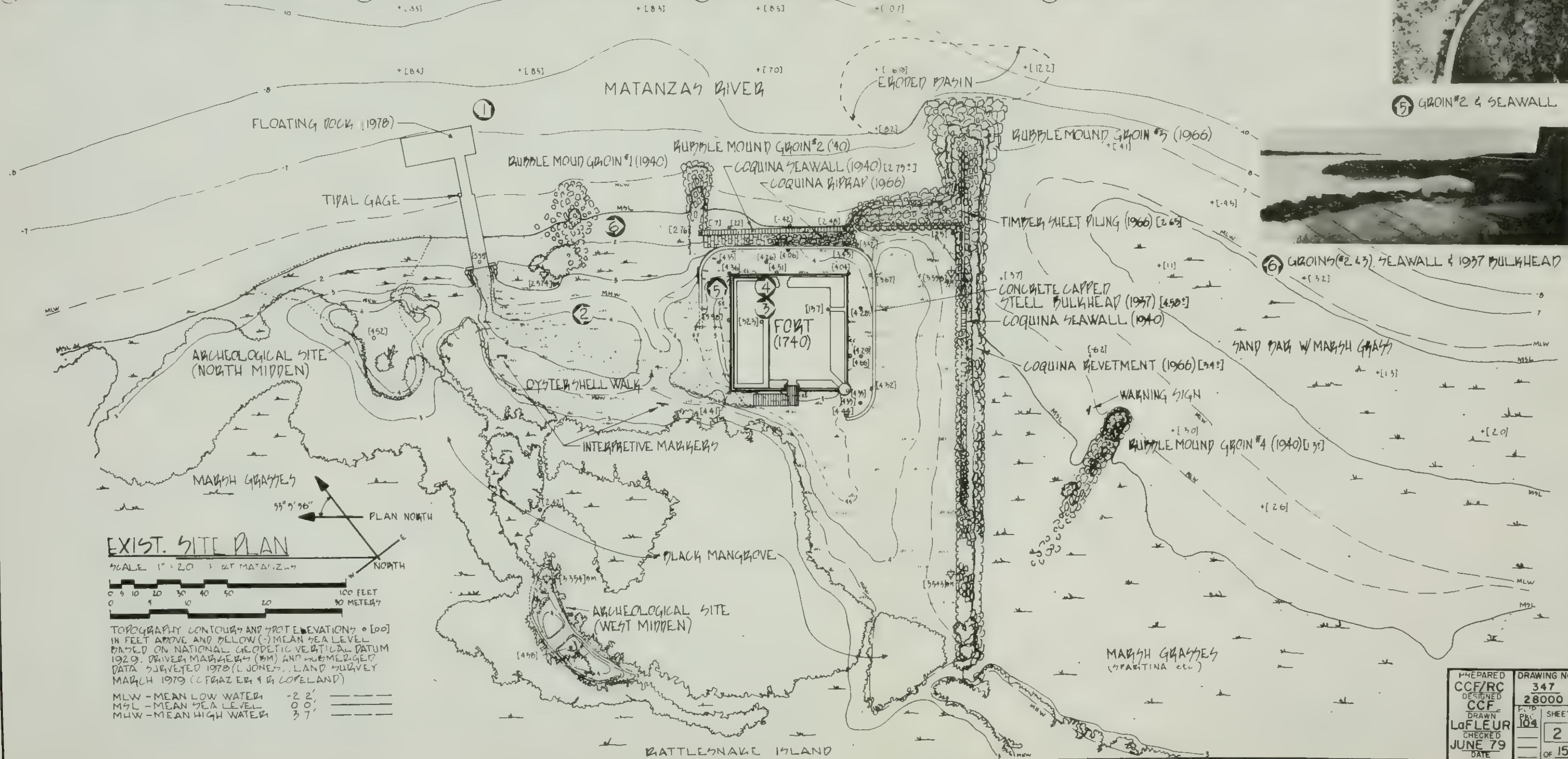
④ 1966 GROIN/REVETMENT @ HIGH TIDE



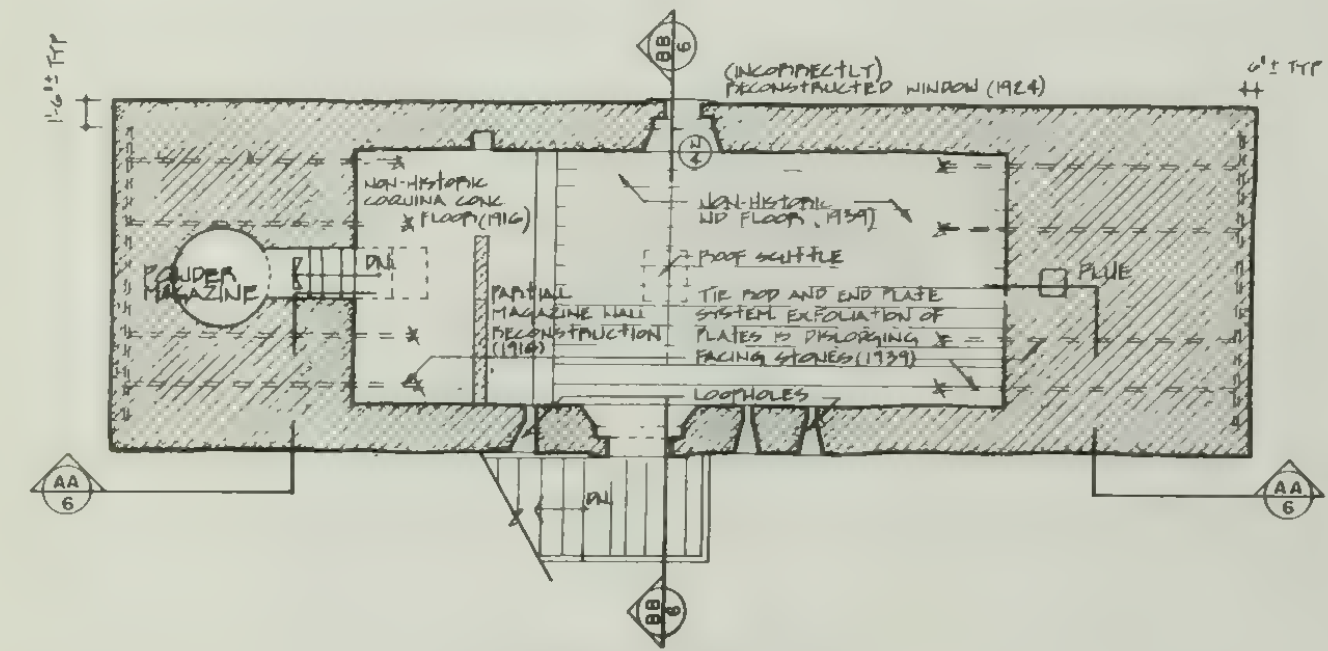
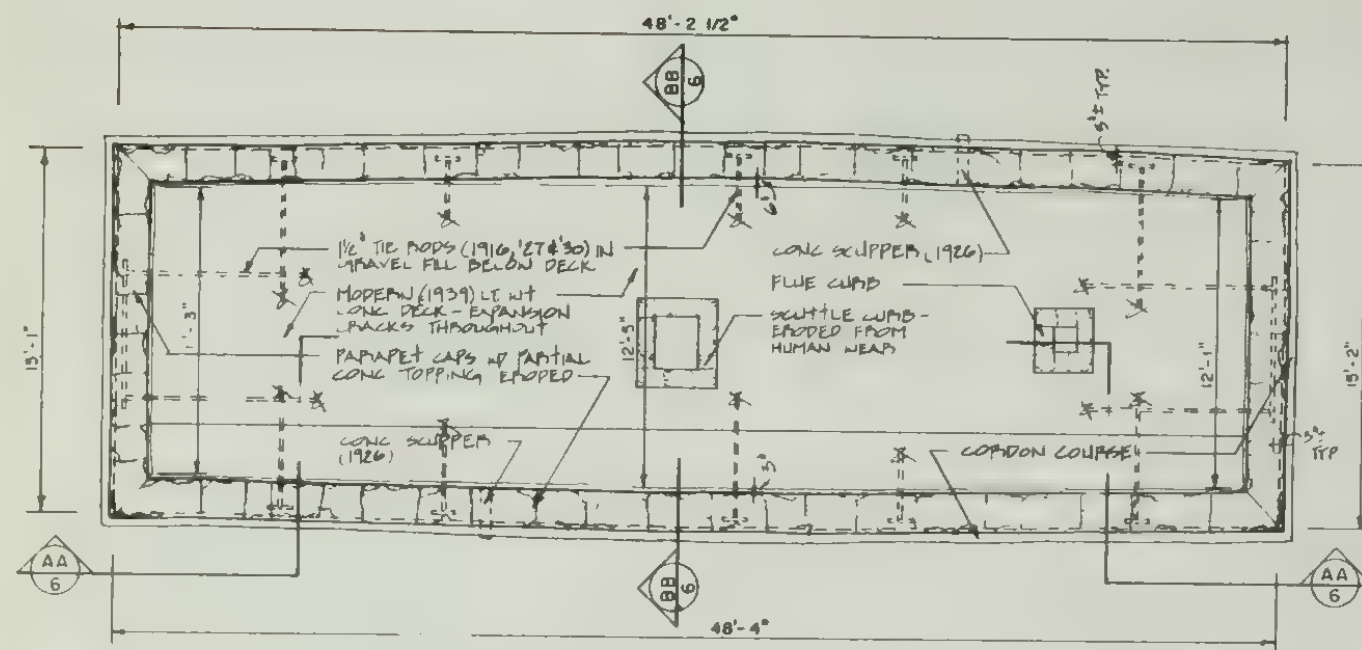
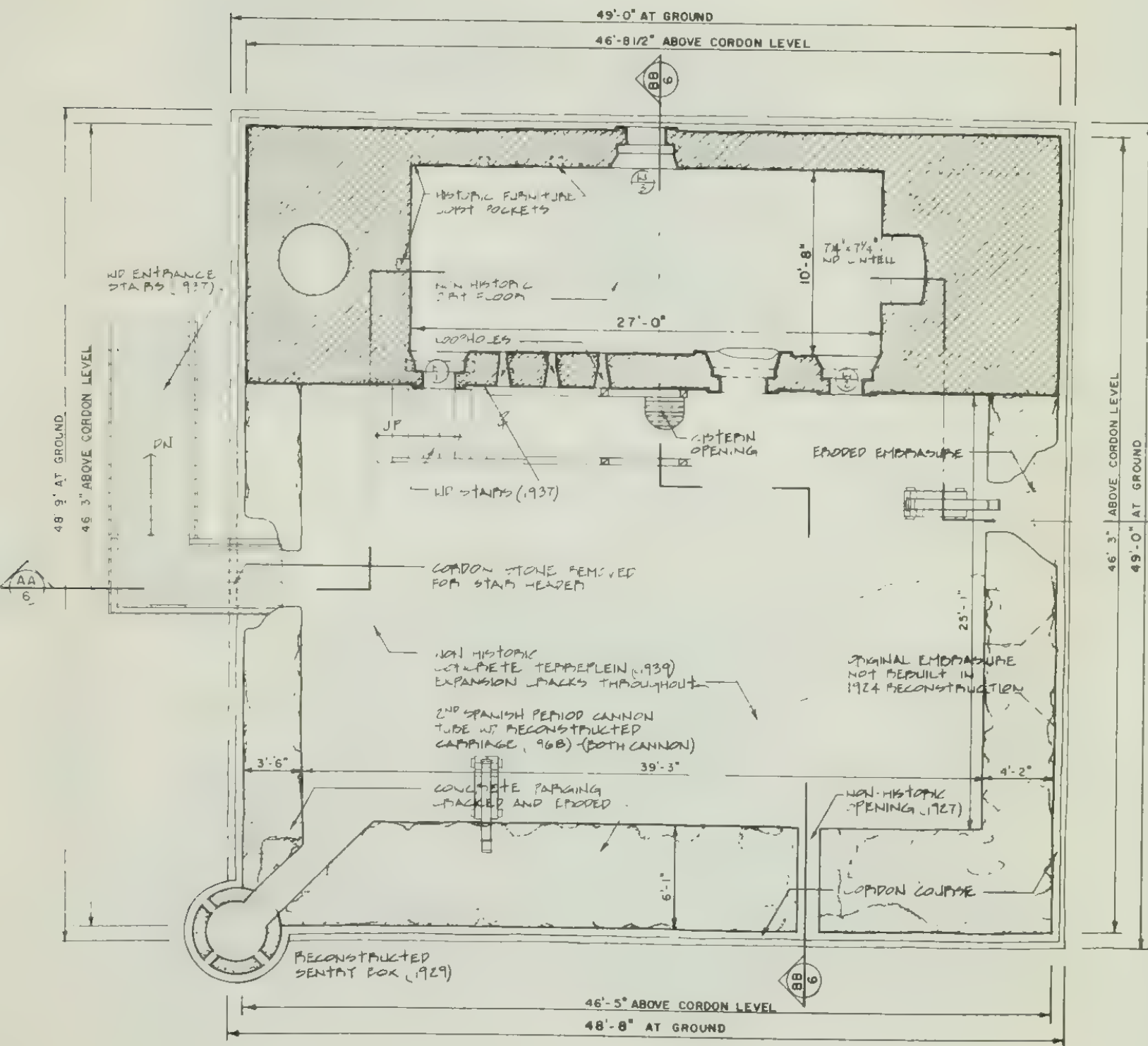
⑤ GROIN #2 & SEAWALL



⑥ GROINS (#2 & 3), SEAWALL & 1937 BULKHEAD

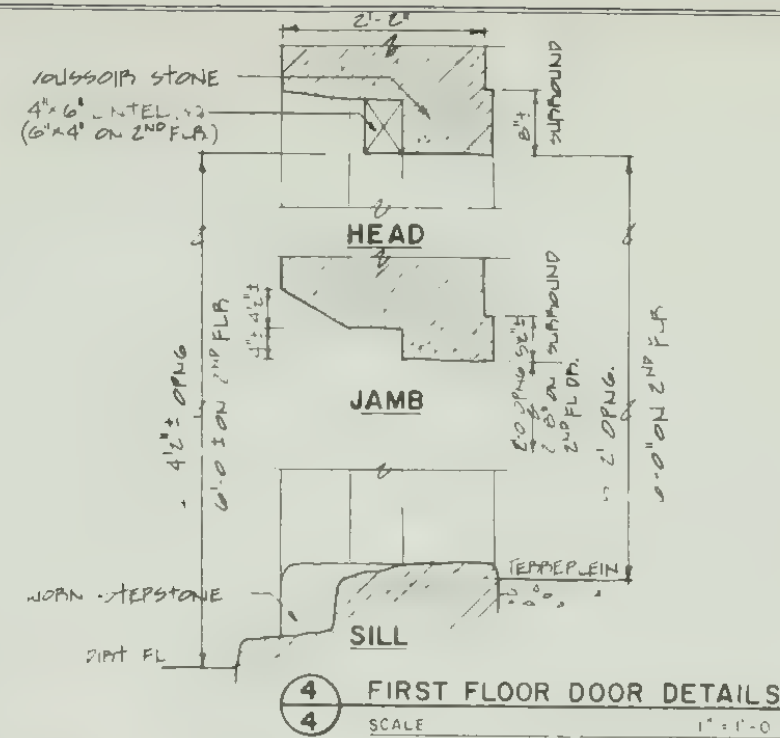


PREPARED CCF/RC	DRAWING NO 347
DESIGNED CCF	28000
DRAWN LoFLEUR	SHEET 104
CHECKED JUNE 79	2
DATE	OF 15

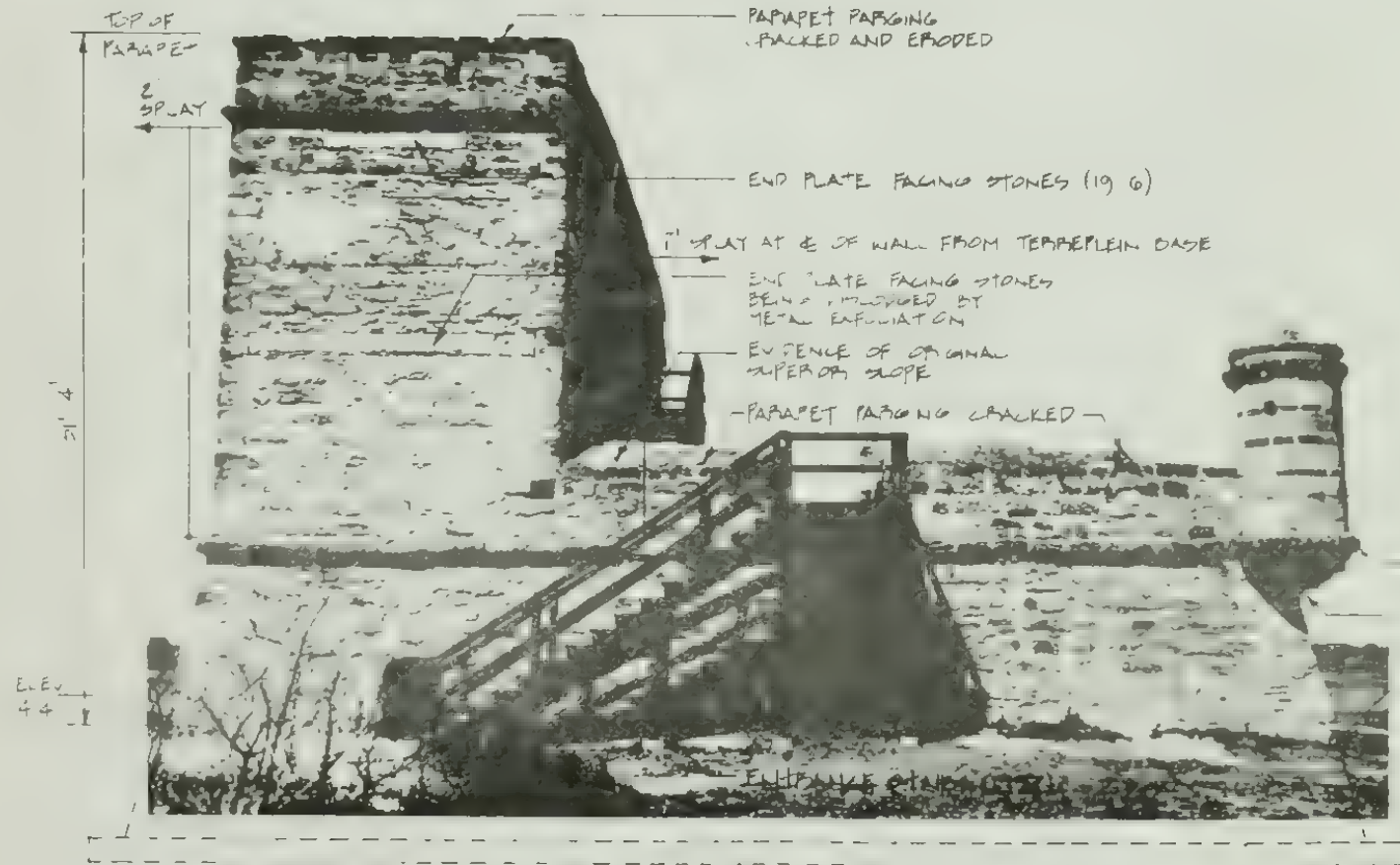


FLOOR PLANS - EXISTING

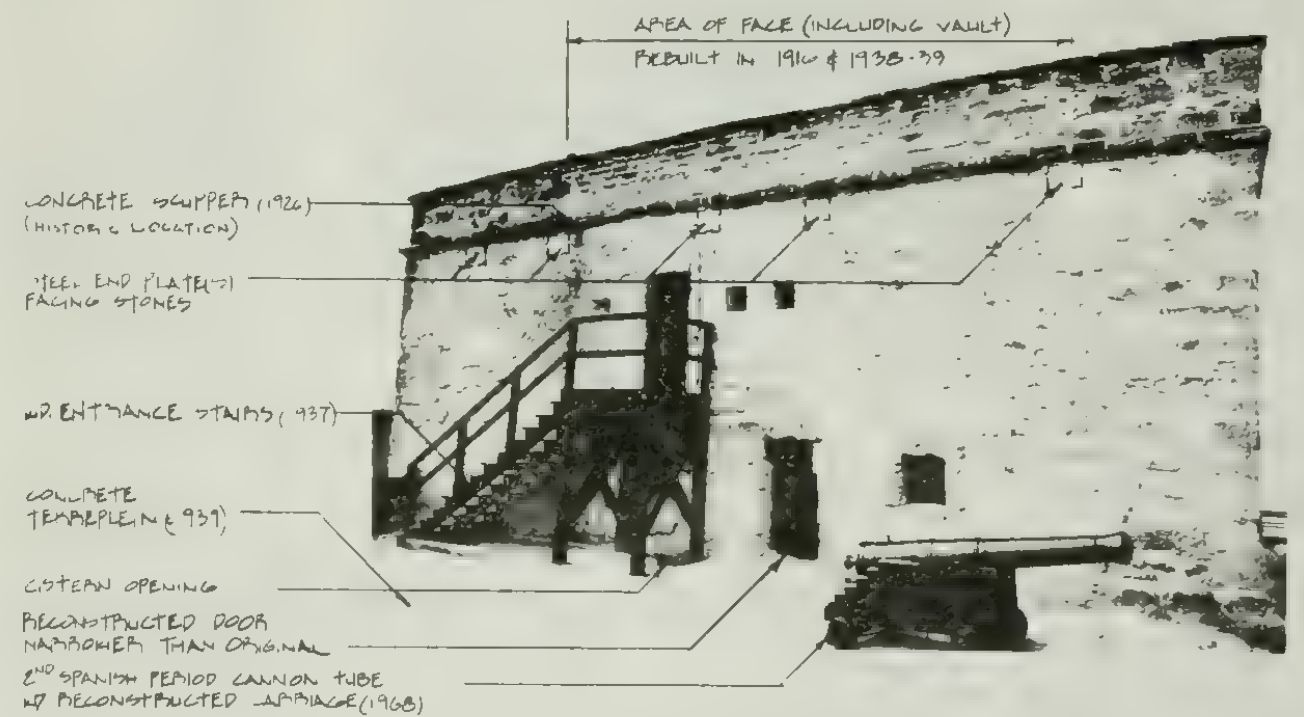
PREPARED	CCF/RWC	DESIGNED	RWC	DRAWN	LOFLEUR	CHECKED	6/79	DATE
DRAWING NO.	347	28000	PCIP	PAGE	104	SHEET	3	OF 15



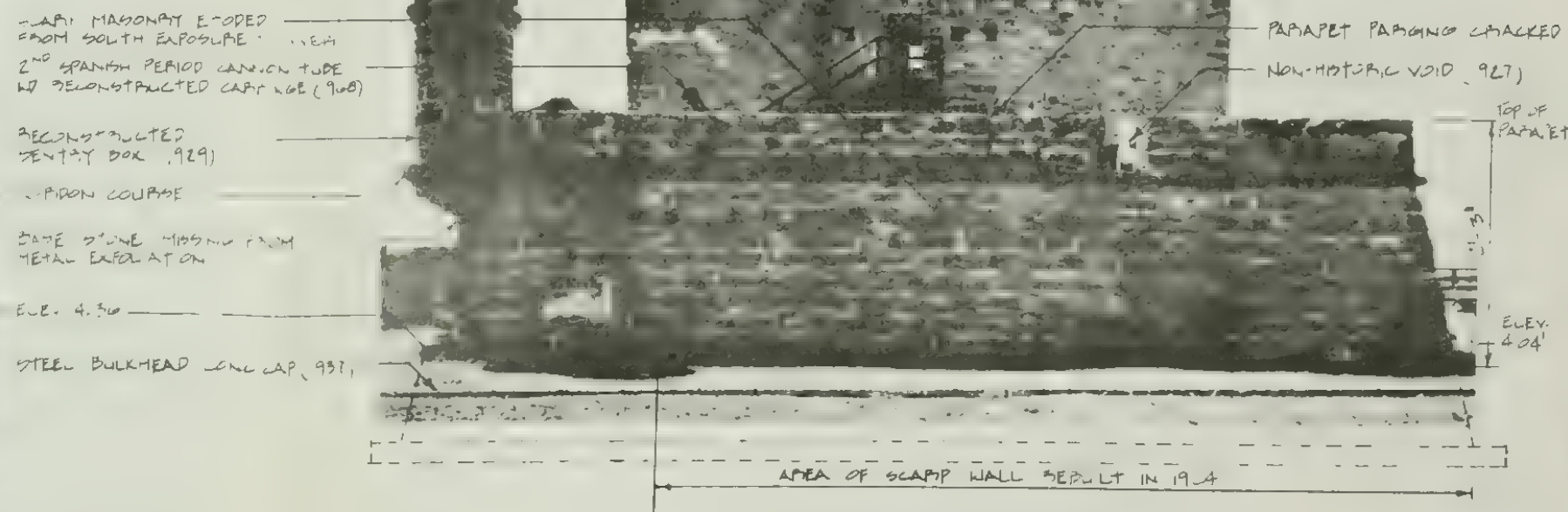
4 FIRST FLOOR DOOR DETAILS
4 SCALE 1" = 1'-0"



1 WEST ELEVATION
4 NO SCALE



3 TOWER SOUTH ELEVATION
4 NO SCALE



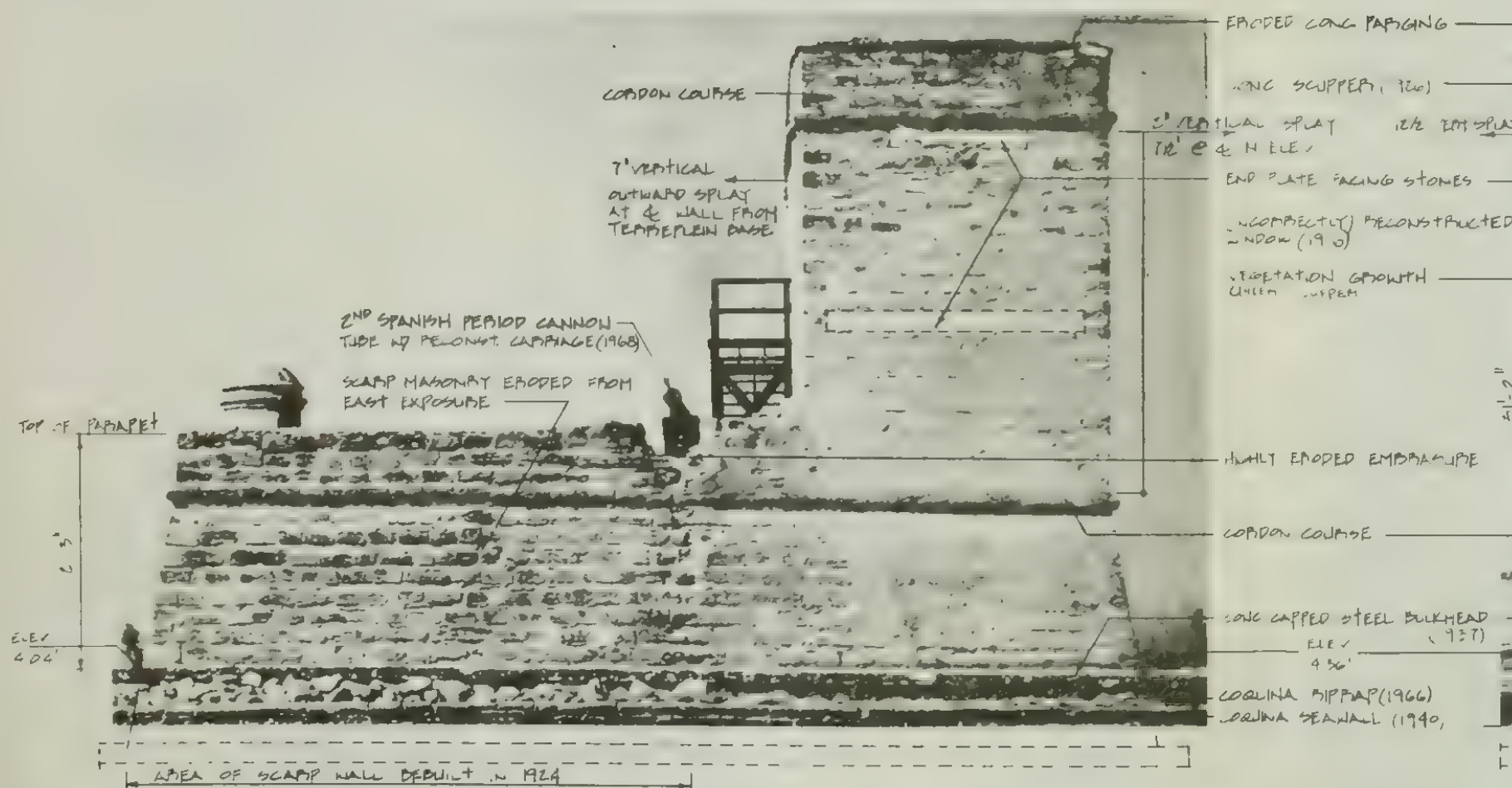
2 SOUTH SCARP ELEVATION
4 NO SCALE

ELEVATIONS & DOOR DETAILS - EXISTING

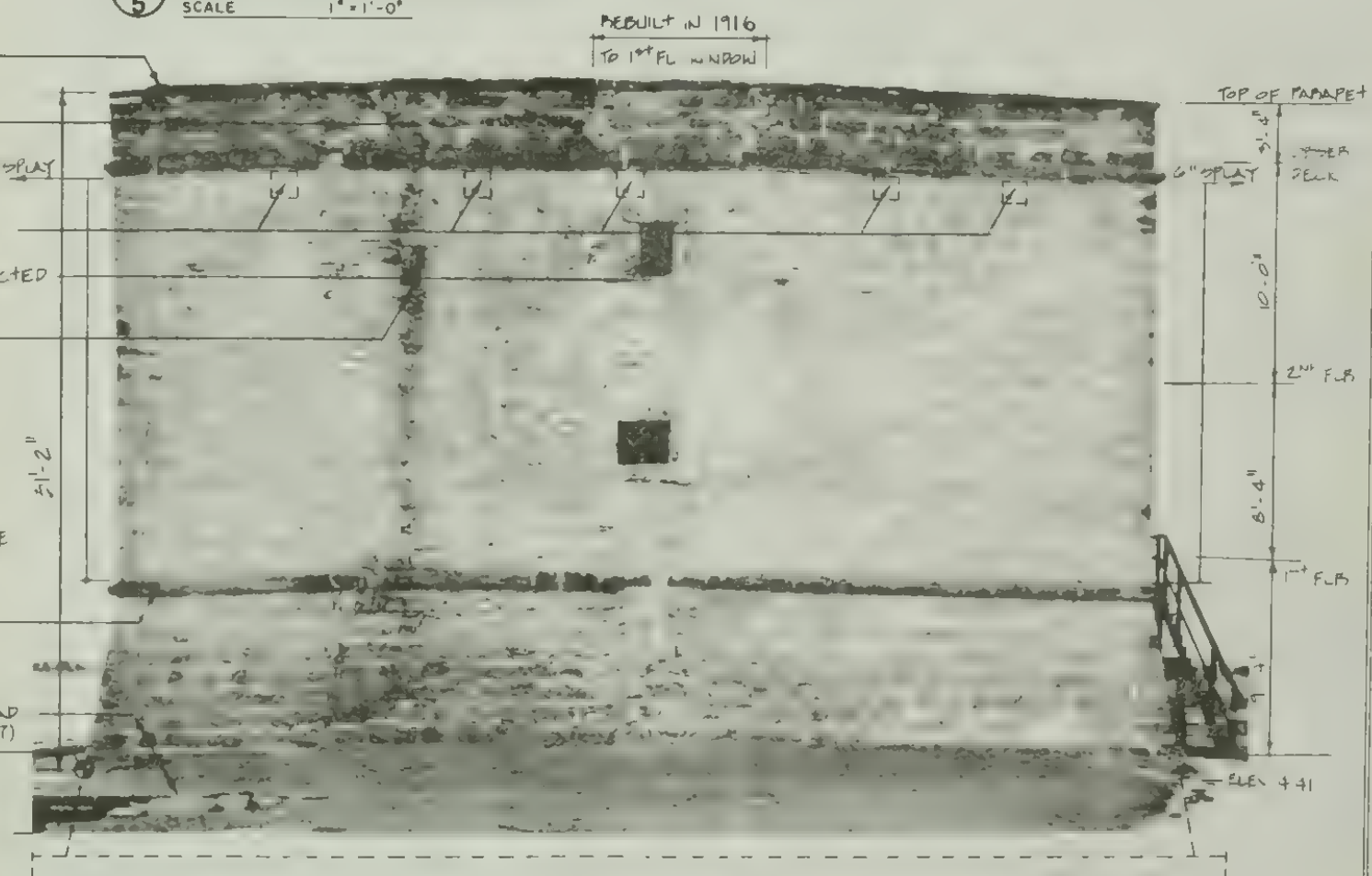
PREPARED	DRAWING NO
CCF/RWC	347
DESIGNED	28,000
RWC	PKG NO
DRAWN	104
LOFLEUR	SHEET
CHECKED	4
6/79	OF 15
DATE	

③ WINDOW DETAILS ④ THE ONLY WINDOW NOT BUILT

4 WINDOW DETAILS 1/2 1/3 1/4
5 SCALE 1" = 1'-0"



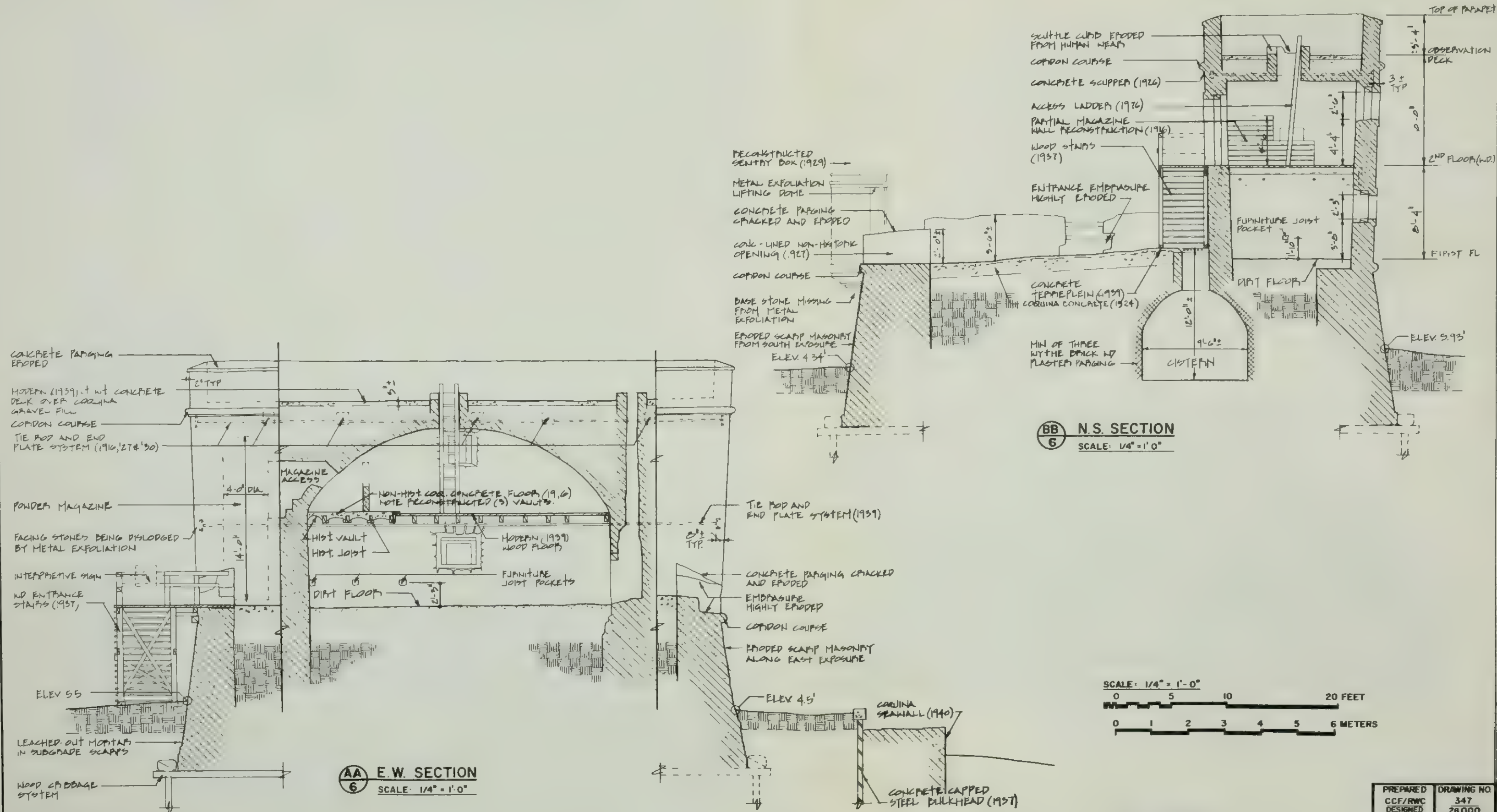
① EAST ELEVATION
5 NO SCALE



2 NORTH ELEVATION
5 NO SCALE

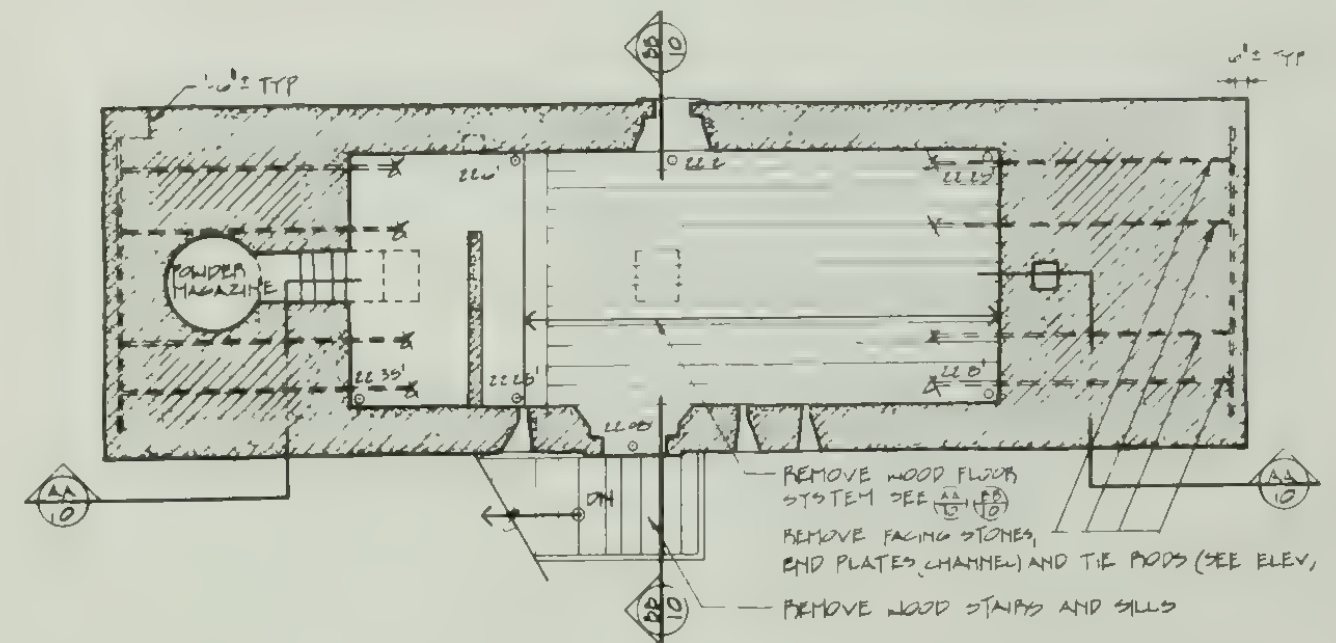
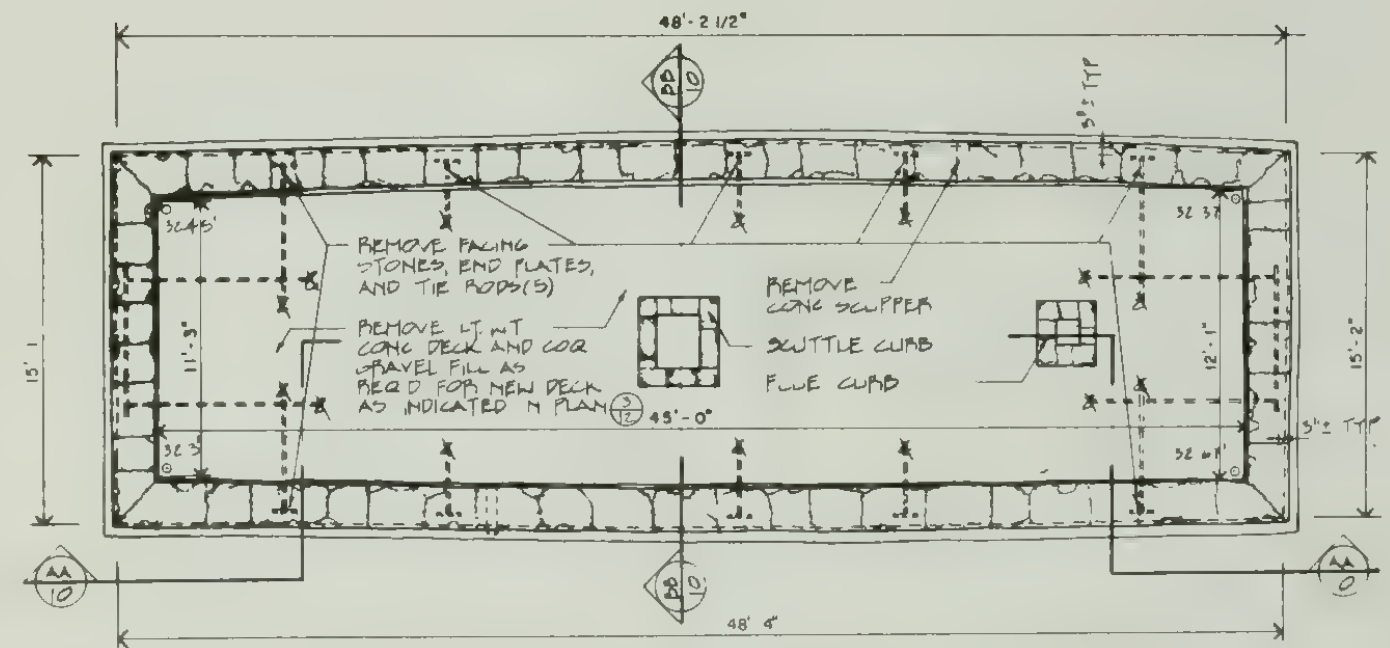
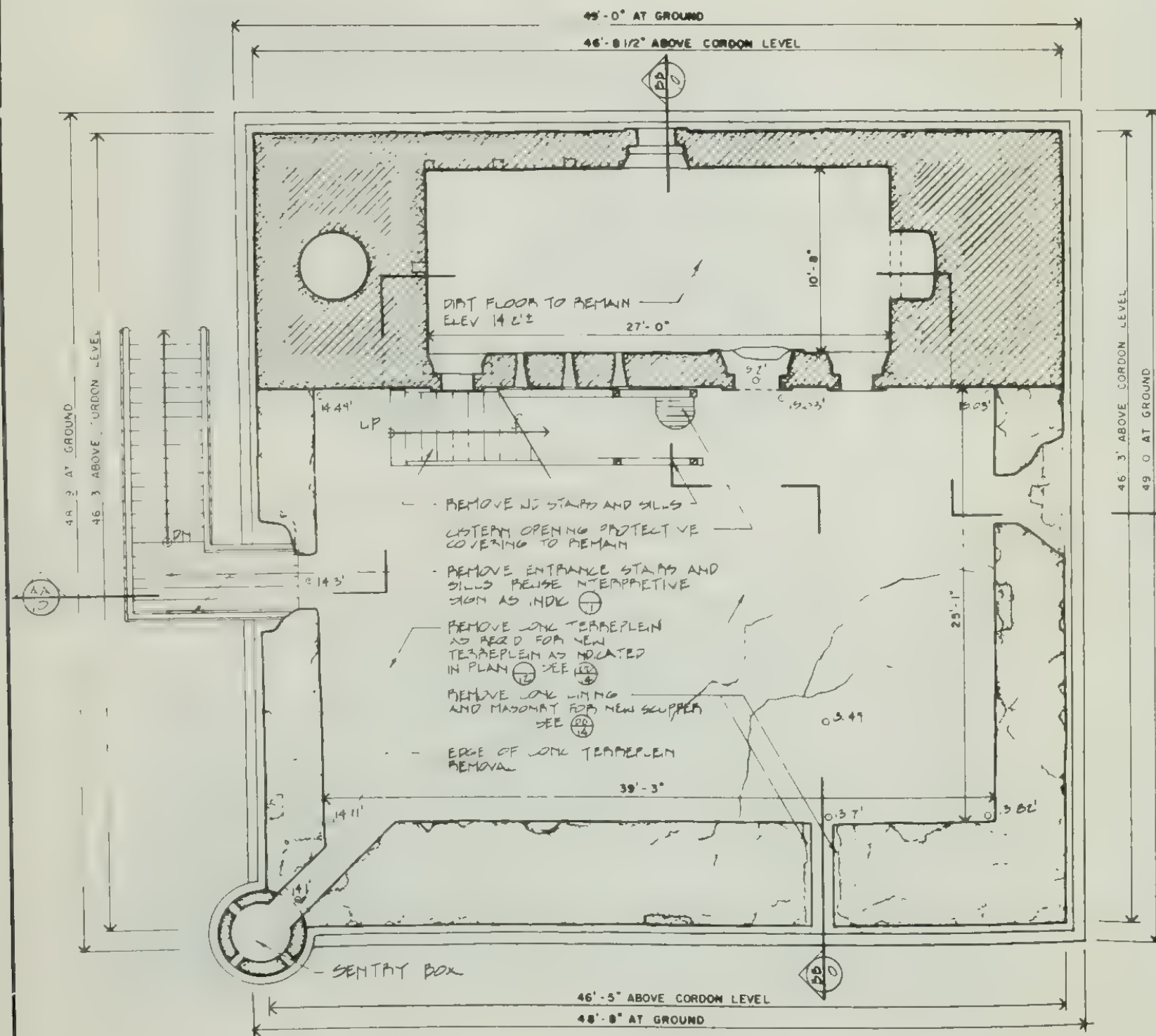
ELEVATIONS & WINDOW DETAILS EXISTING

PREPARED	DRAWING NO	
CCF/RWC	347	
DESIGNED	28,000	
RWC	PKG NO	SHEET
DRAWN	104	5
LoFLEUR		
CHECKED		
6/79		OF 15
DATE		



SECTIONS - EXISTING

PREPARED CCF/RWC	DESIGNED RWC	DRAWN LoFLEUR	CHECKED 6/79	DATE
DRAWING NO. 347	28,000	PCIP PRG 104	SHEET 6	OF 15



NOTES

1 DUE TO WEATHERING OF STONE FABRIC,
ALL DIMENSIONS ±

2 SALVAGE ALL FACING STONES REMOVED
FOR REUSE.

2 SALVAGE ALL FACING STONES REMOVED
FOR REUSE.

FLOOR PLANS- DEMOLITION

PREPARED	DRAWING NO
CCF/RWC	347
DESIGNED	28,000
RWC	PCIP
DRAWN	PNG
LOFLEUR	104
CHECKED	SHEET
6/79	7
DATE	OF 15

REMOVE FACING STONES END
PLATES AND TIE RODS (5)

CUT TIP OF SCUPPER TO
FORM CLEAN EDGE.

REMOVE WOOD STAIRS

REMOVE CONC. TERREPLEIN
AS REQ'D. FOR NEW TERREPLEIN AS
INDICATED IN PLAN. SEE (12)

REMOVE CANNON PRIOR TO ANY
CONST. WORK. FOR RELOCATION
SEE (1)



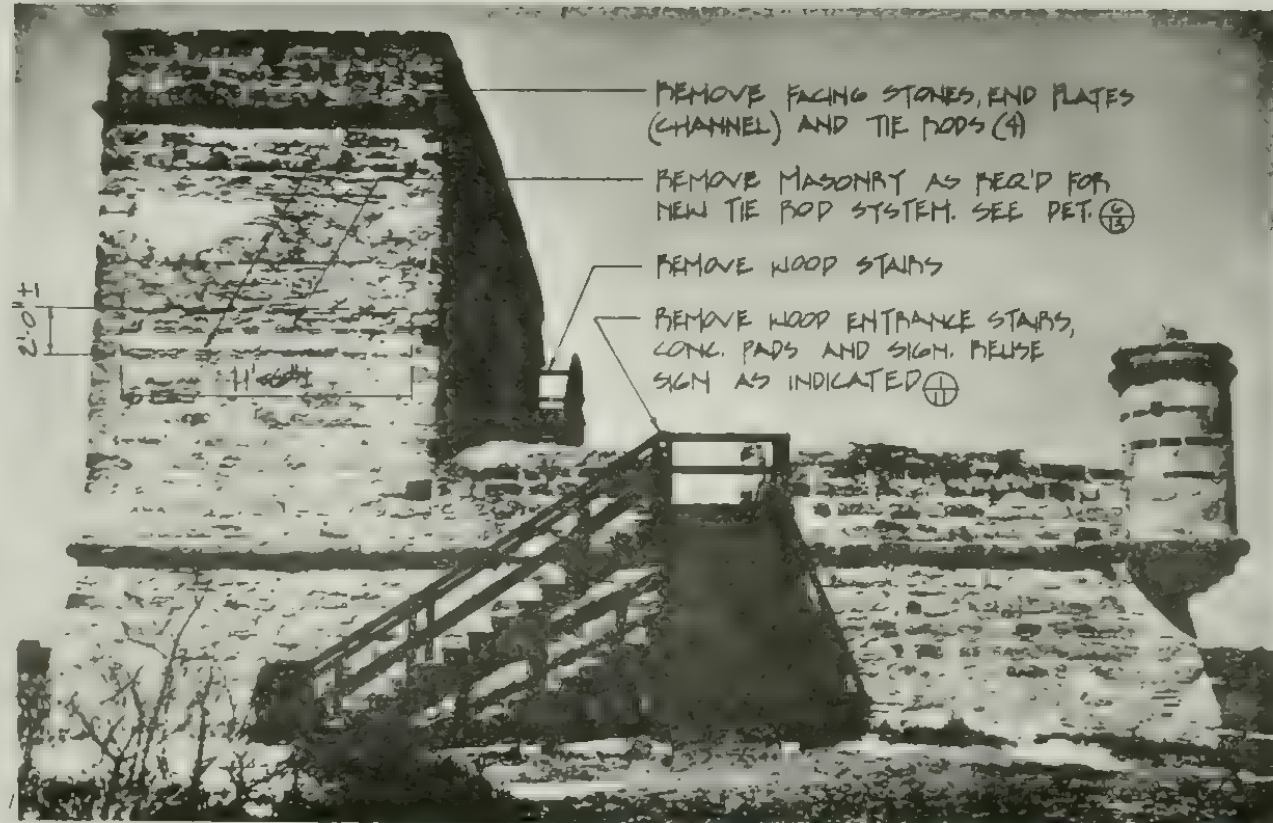
(3) TOWER SOUTH ELEVATION
(8) NO SCALE

REMOVE FACING STONES, END PLATES
(CHANNEL) AND TIE RODS (4)

REMOVE MASONRY AS REQ'D FOR
NEW TIE ROD SYSTEM. SEE DET. (13)

REMOVE WOOD STAIRS

REMOVE WOOD ENTRANCE STAIRS,
CONC. PADS AND SIGN. REUSE
SIGN AS INDICATED (14)



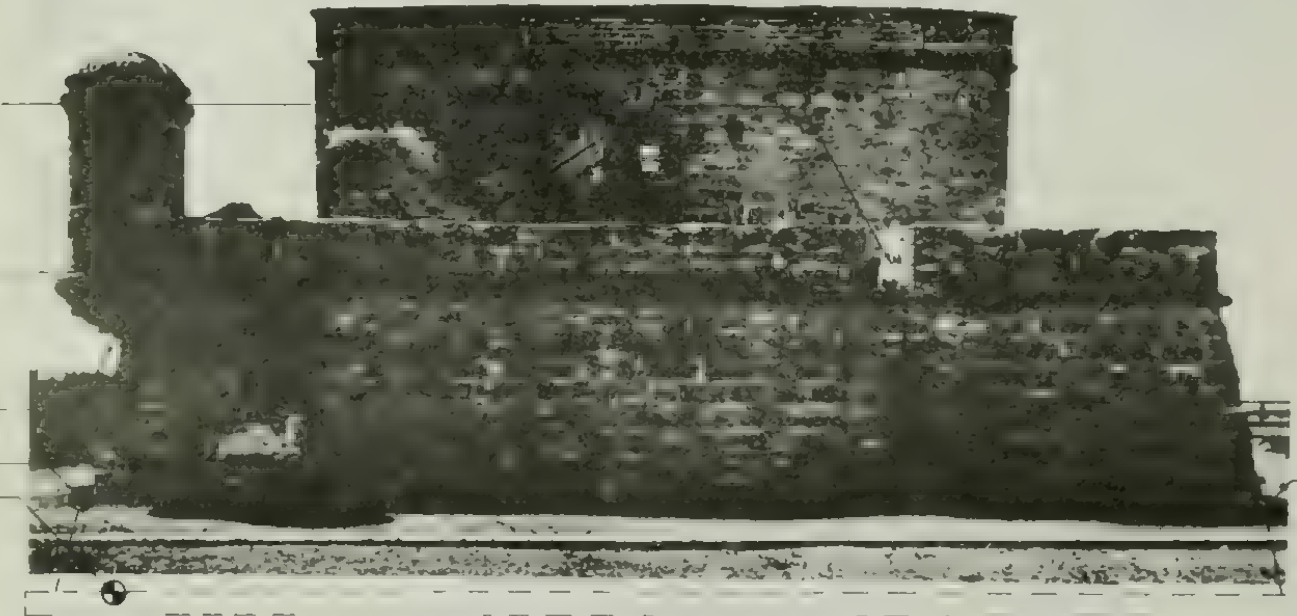
REMOVE CONC. "LINING" AND
MASONRY AS REQ'D FOR NEW
SCUPPER SEE (15)

REMOVE CANNON PRIOR TO
ANY CONST. WORK FOR
RELOCATION SEE (1)

REMOVE ALL VISIBLE STEEL
AND MASONRY AS REQ'D SEE (16)
EL. 4.36'

ESTIMATED ELEVATION AT TOP
OF FOOTING 5.3'± BASE OF
EXCAVATION FOR SUBGRADE
SCARP WALL TREATMENT
EXCEPT ON WEST ELEVATION,
EXISTENCE AND EXACT DEPTH
OF "COLLAR BEAM" IS
UNCONFIRMED.

NOTE
SALVAGE ALL FACING STONE
REMOVED FOR REUSE.

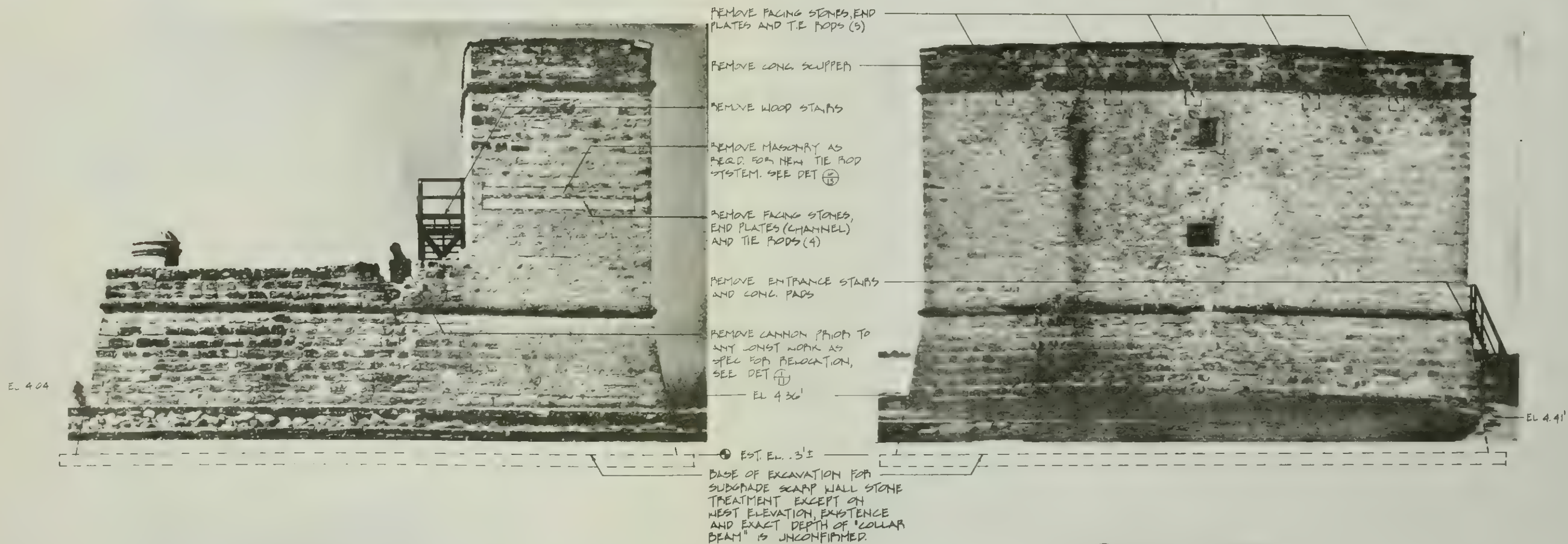


(2) SOUTH SCARP ELEVATION
(8) NO SCALE

(1) WEST ELEVATION
(8) NO SCALE

ELEVATIONS - DEMOLITION

PREPARED	DRAWING NO.
CCF/RWC	347
DESIGNED	28,000
RWC	
DRAWN	PKG NO
LOFLEUR	104
CHECKED	SHEET
6/79	8
DATE	OF 15



① EAST ELEVATION
9 NO SCALE

② NORTH ELEVATION
9 NO SCALE

**ELEVATIONS -
DEMOLITION**

PREPARED CCF/RWC	DRAWING NO. 34T
DESIGNED	28,000
RWC	PKG NO 104
DRAWN	SHEET 9
LoFLEUR	OF 15
CHECKED	
6/79	
DATE	

REMOVE LT. WT. CONC DECK AND CORR GRAVEL FILL AS REQ'D FOR NEW DECK AS INDICATED IN PLAN (3/17)

REMOVE FACING STONES, END PLATES AND TIE RODS (5)

LONGITUDINAL TIE RODS AND END PLATES TO REMAIN

POWDER MAGAZINE BEYOND

REMOVE ENTRANCE STAIRS AND CONC PADS REUSE INTERPRETIVE SIGN SEE DET (2/11)

ELEV 55'

AA
10 E.W. SECTION
SCALE: 1/4" = 1'-0"

REMOVE ALL VISIBLE STL AND MASONRY AS REQ'D FOR NEW BASE STONE SEE (1/15)

ELEV. 4.34'

REMOVE FACING STONES, END PLATES (CHANNEL), AND TIE RODS (4)

REMOVE CONC TERREPLEIN AS REQUIRED FOR NEW TERREPLEIN AS INDICATED IN PLAN (1/16) SEE (2/13)

ELEV 4.5'

STEEL BULKHEAD

EXIST. LONGITUDINAL TIE RODS TO REMAIN

REMOVE LT. WT. CONC DECK AND CORR GRAVEL FILL AS REQ'D FOR NEW DECK AS INDICATED IN PLAN (3/17)

REMOVE FACING STONES, END PLATES, AND TIE RODS (5)

REMOVE W/D FLOOR SYSTEM AS INDICATED

REMOVE FACING STONES, END PLATES (CHANNEL), AND TIE RODS (4)

REMOVE STAIRS

REMOVE CONC TERREPLEIN AS REQUIRED FOR NEW TERREPLEIN AS INDICATED IN PLAN (1/16)

REMOVE CONC "LINING" AND MASONRY AS REQ'D FOR NEW SCUPPER (2/13)

1'-8" VARIES

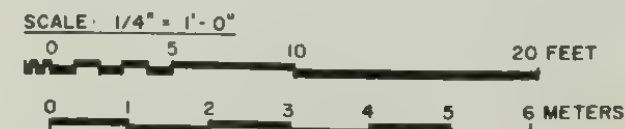
EXIST. DIRT FLOOR

CISTERN

ELEV. 5.93'

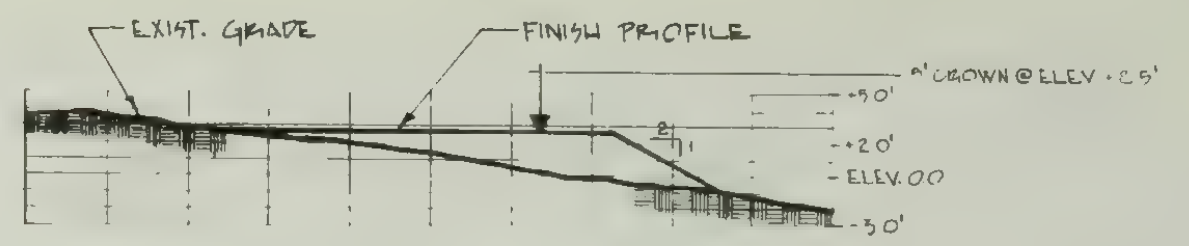
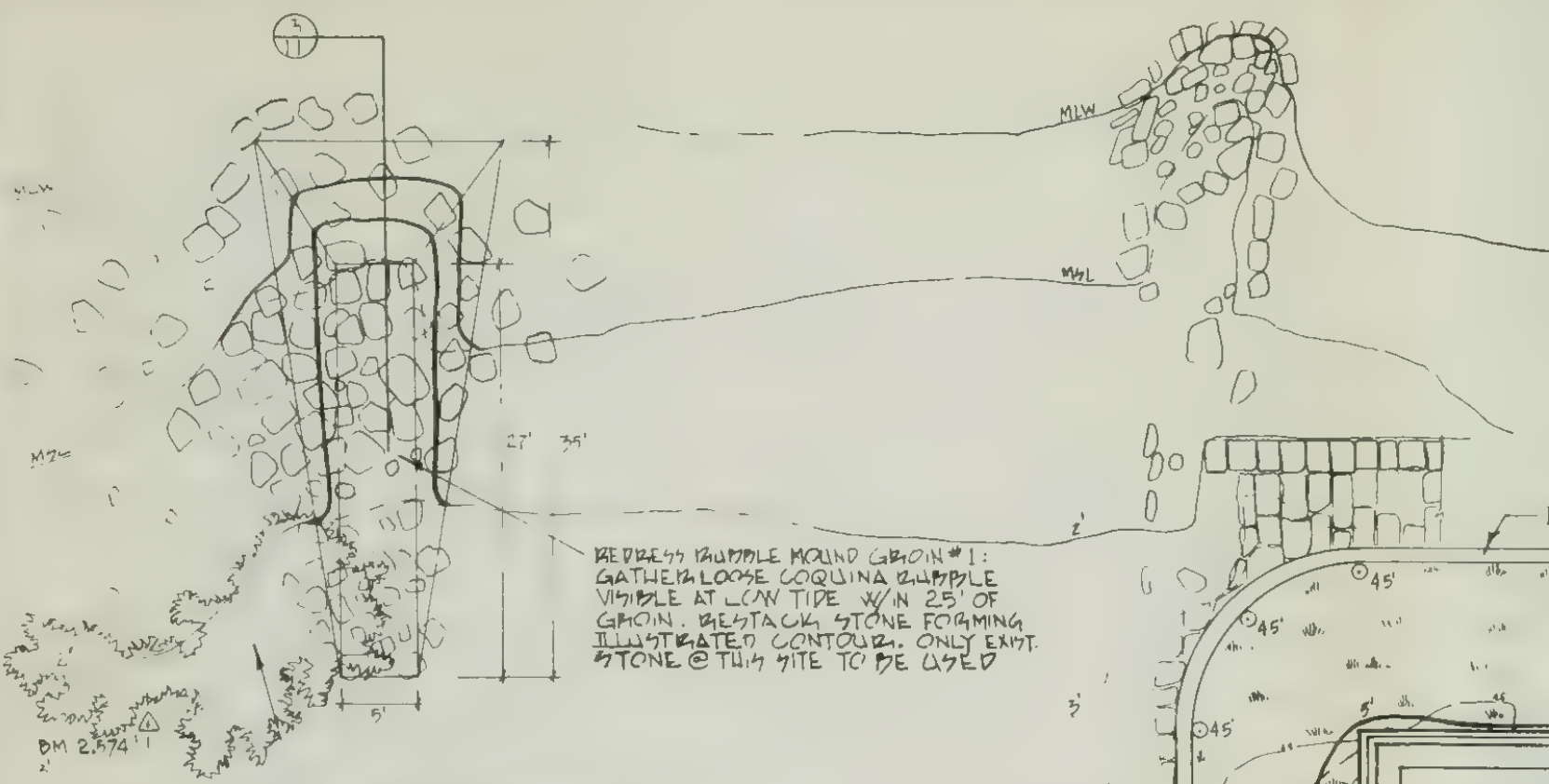
BB
10 N.S. SECTION
SCALE: 1/4" = 1'-0"

NOTE
ALL FACING STONES REMOVED TO BE SALVAGED FOR REUSE.

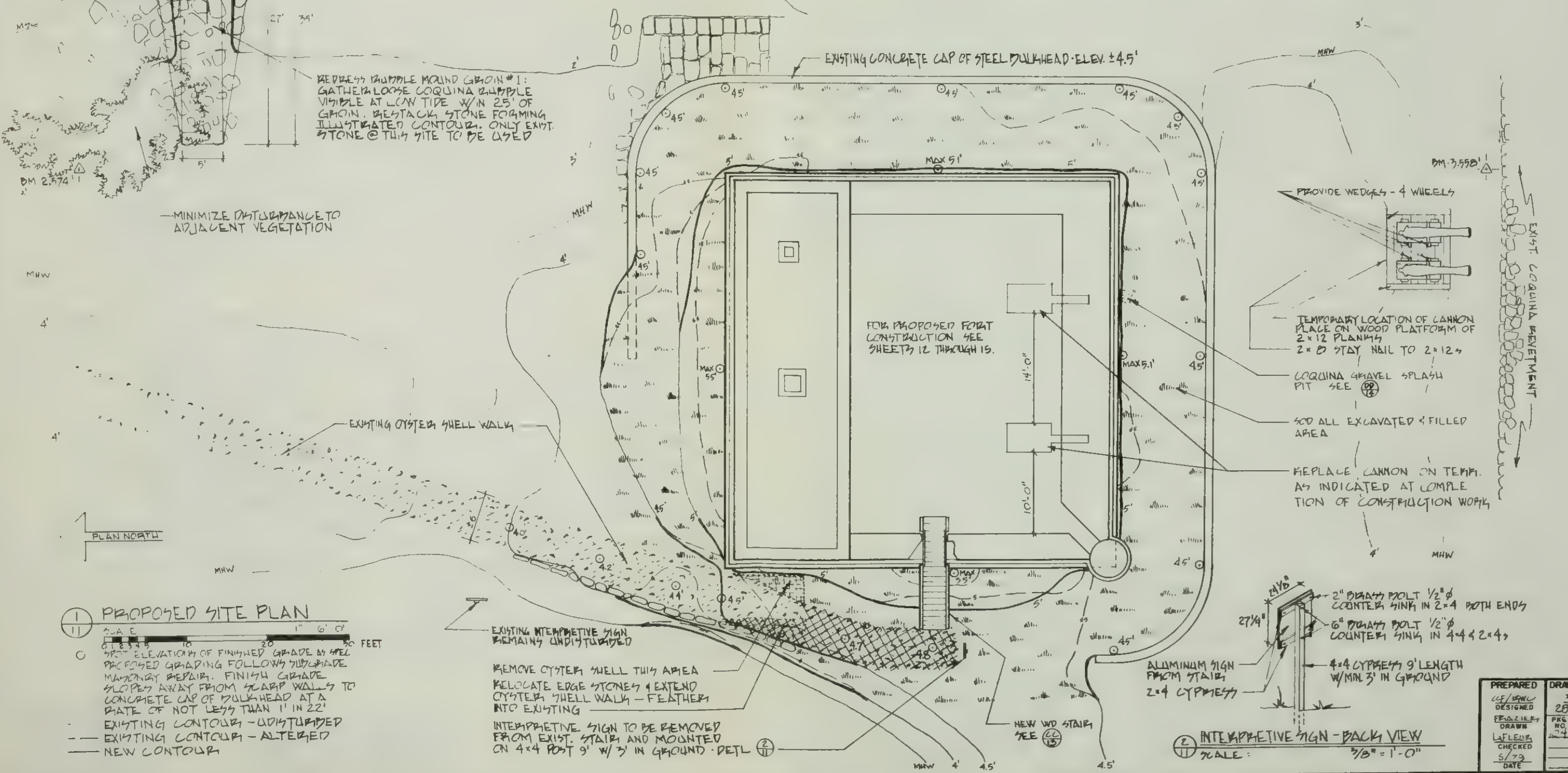


SECTIONS -
DEMOLITION

PREPARED CCF/RWC DESIGNED	DRAWING NO. 347 28,000
RWC DRAWN	PCIP PKG. 104
LOFLEUR CHECKED	SHEET 10
6/79 DATE	OF 15



③ SECTION THROUGH RUBBLE MOUND GROIN #1
SCALE: 1" = 6'-0"



① PROPOSED SITE PLAN
SCALE: 1" = 6'-0"

0 10 20 30 FEET

SPOT ELEVATIONS OF FINISHED GRADE BY THE PROPOSED GRADING FOLLOWS SUBGRADE MAINTENANCE REPAIR. FINISH GRADE SLOPES AWAY FROM CLAMP WALLS TO CONCRETE CAP OF BULKHEAD AT A RATE OF NOT LESS THAN 1" IN 22'

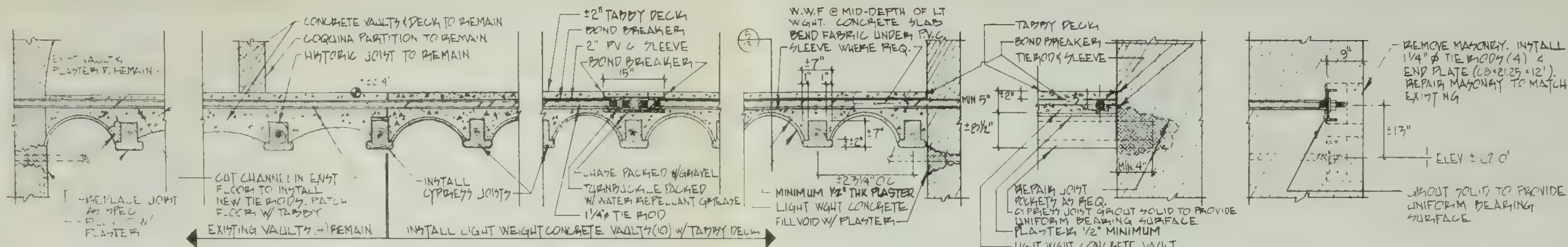
— EXISTING CONTOUR - UNDISTURBED

— EXISTING CONTOUR - ALTERED

— NEW CONTOUR

② INTERPRETIVE SIGN - BACK VIEW
SCALE: 3/8" = 1'-0"

PREPARED	DESIGNED	DRAWN	CHECKED	DATE	DRAWING NO.	SHEET
CE/BRN	CE/BRN	CE/BRN	CE/BRN	5/79	347	11
					28.000	OF 15



1 HISTORIC VAULT
SCALE: 1" = 1'-0"

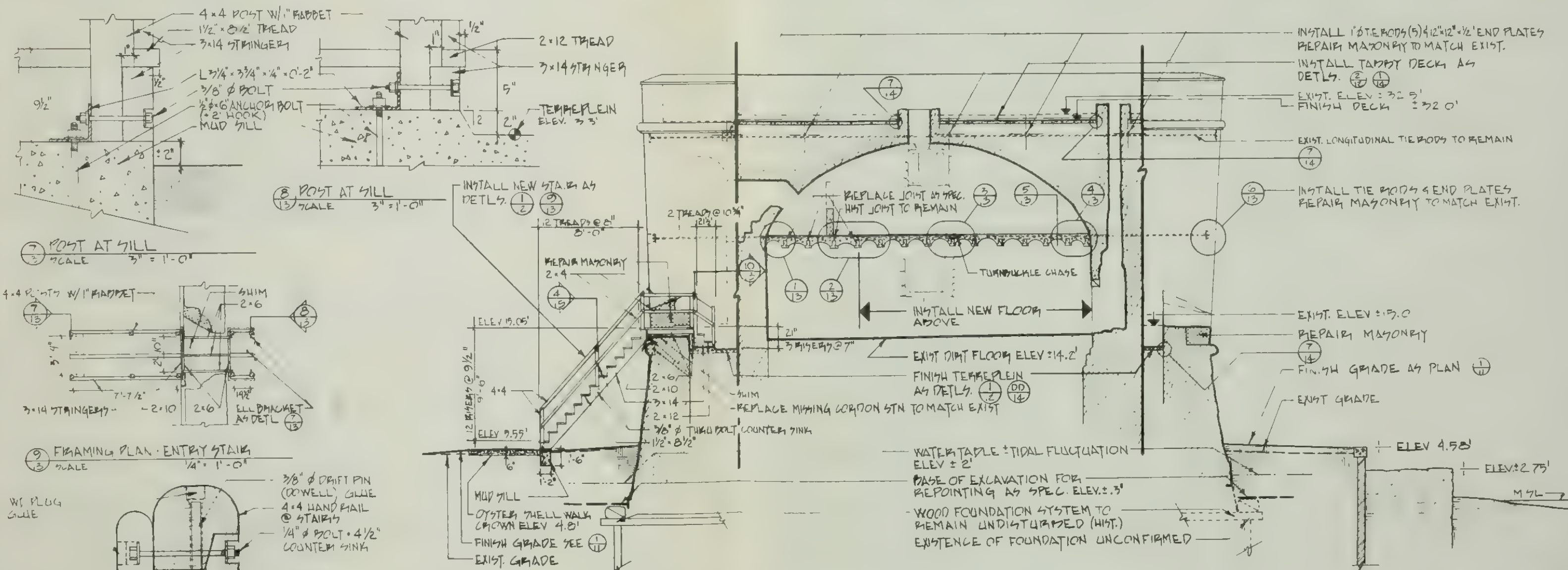
2 CONNECT EXISTING & NEW VAULTS
SCALE: 1" = 1'-0"

3 TURNBUCKLE CHASE
SCALE: 1" = 1'-0"

4 VAULT & JOINT - TYPICAL
SCALE: 1" = 1'-0"

5 VAULT & JOINT POCKET - TYP.
SCALE: 1" = 1'-0"

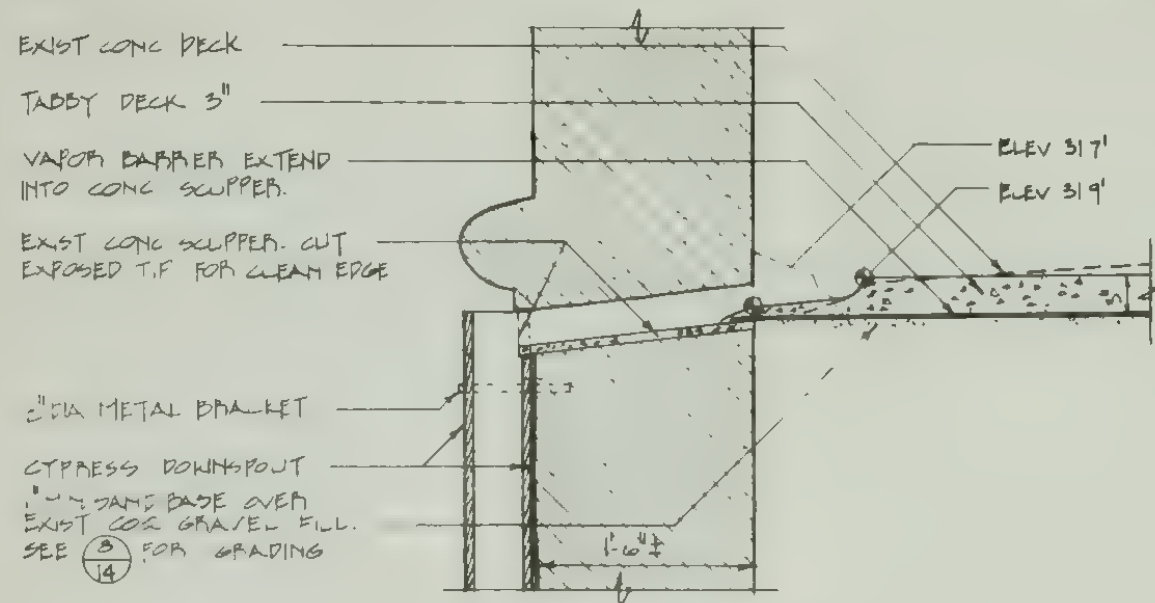
6 TIE ROD END PLATE - TYPICAL
SCALE: 1" = 1'-0"



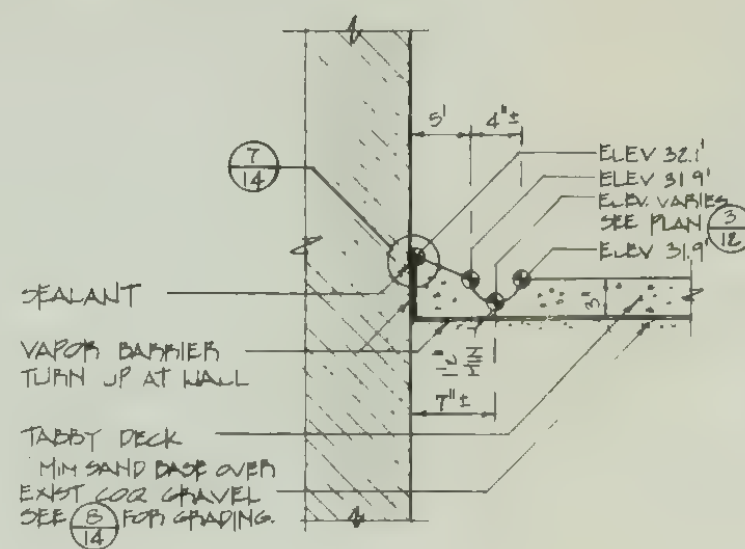
11 SECTION THROUGH TOWER & EMBARASURES
SCALE: 1/4" = 1'-0"

SECTION & DETAILS - PROPOSED WORK

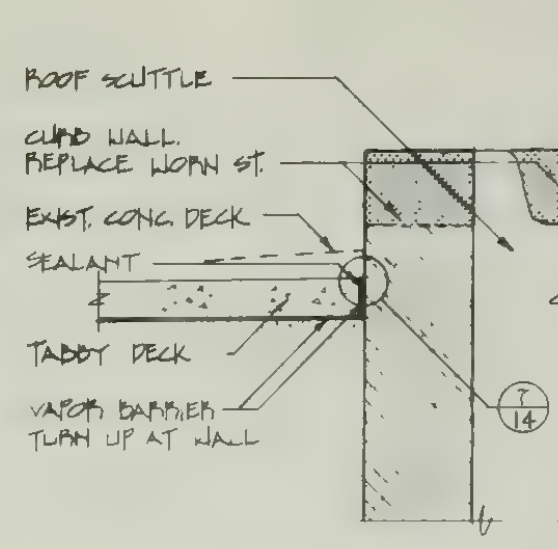
PREPARED	CCF/RWC	DESIGNED	CCF	DRAWN	LOFLEUR	CHECKED	6/79	DATE
DRAWING NO.	347	28,000	PKG NO.	104	SHEET	13	OF 15	



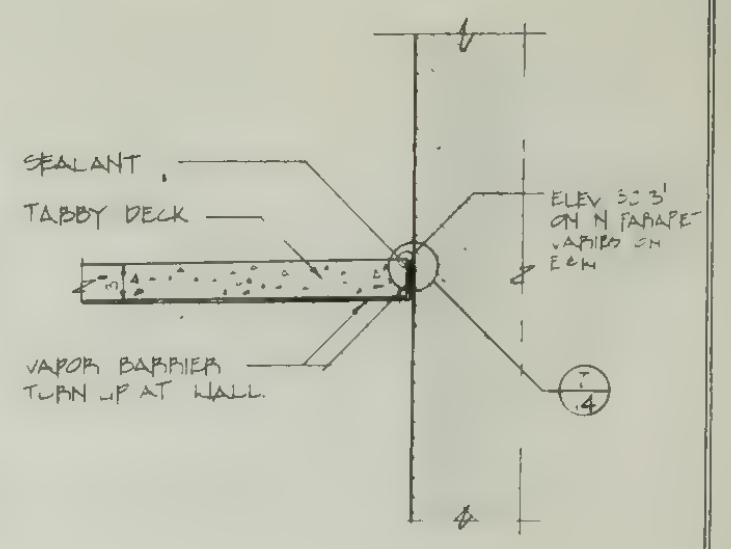
(1) DOWNSPOUT-SCUPPER DETAIL
14 SCALE 1 1/2" = 1'-0"



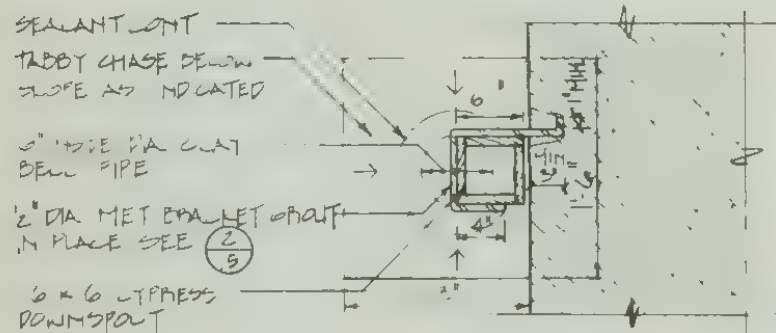
(2) TROUGH AT S PARAPET
14 SCALE 1 1/2" = 1'-0"



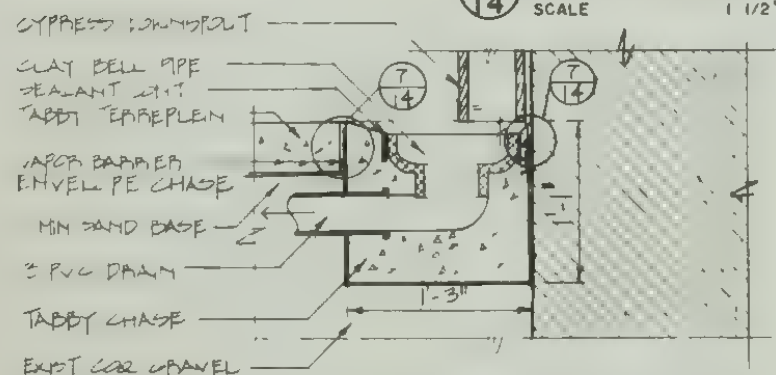
(3) DECK AT CURB WALL-TYP
14 SCALE 1 1/2" = 1'-0"



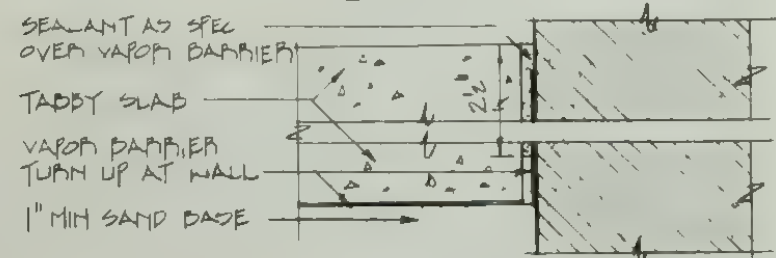
(4) DECK AT N PARAPET - E & W SIM
14 SCALE 1 1/2" = 1'-0"



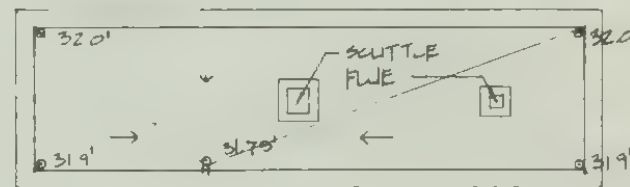
(5) DOWNSPOUT CONNECTION
14 SCALE 1 1/2" = 1'-0"



(6) DRAINAGE CHASE DETAIL
14 SCALE 1 1/2" = 1'-0"



(7) SEALANT DETAIL - TYP
14 FULL SCALE



(8) FILL GRADING PLAN
14 SCALE 1/8" = 1'-0"

INSTALL DOWNSPOUT AND DRAIN PIPE AS DET (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

INSTALL STAIRS SEE DET (12) (13) (14) (15)

MASONRY REPAIR

INSTALL CONCRETE TERREPLEIN SEE (12)

INSTALL SCUPPER AND FILL VOID MASONRY TO MATCH EXIST

REPLACE MISSING CORBELLED BASE STONE SEE DET (9) (15)

COR GRAVEL SPLASH PIT

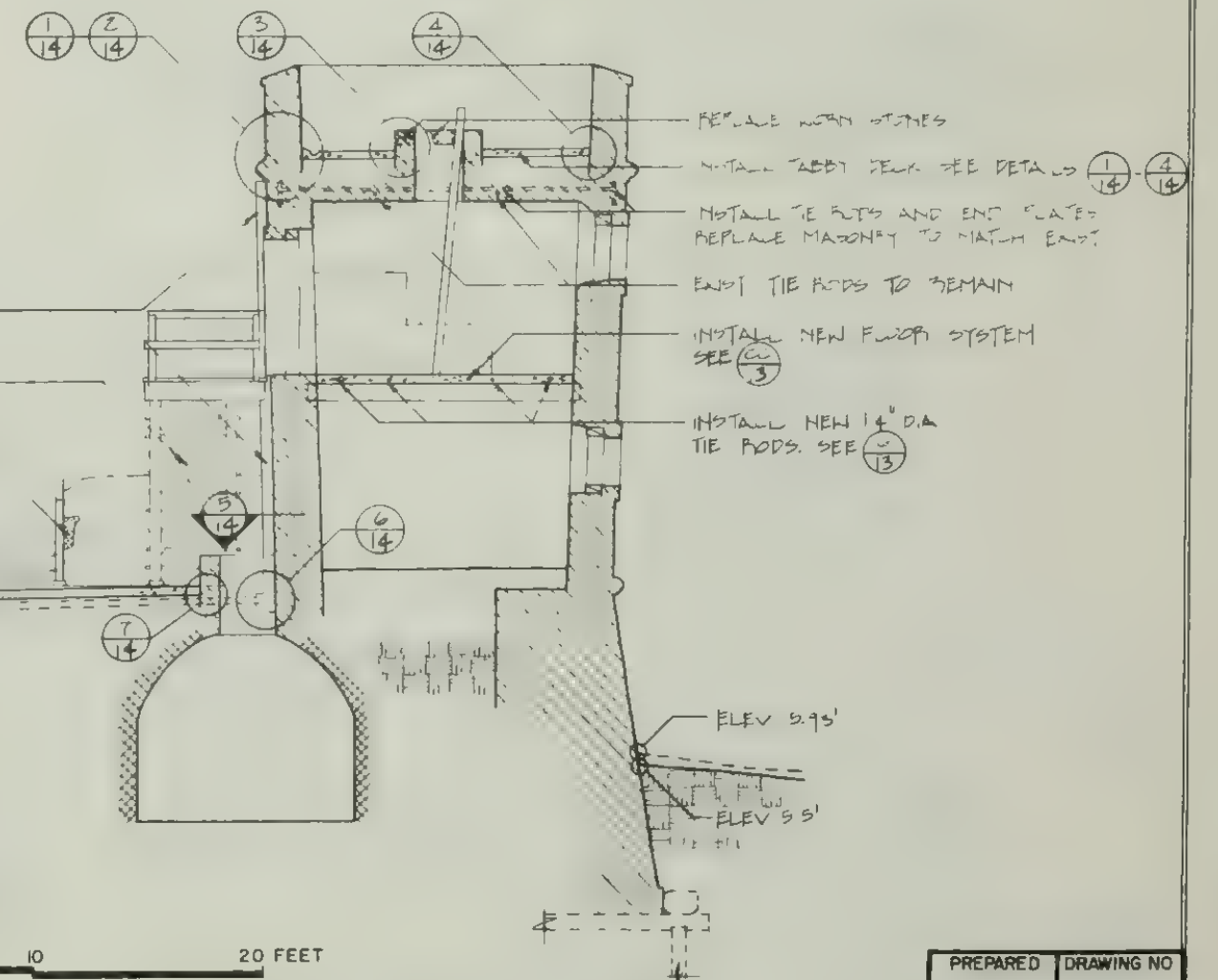
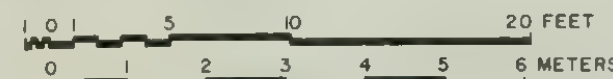
ELEV 5.1'

ELEV 4.34'

BASE OF EXCAVATION

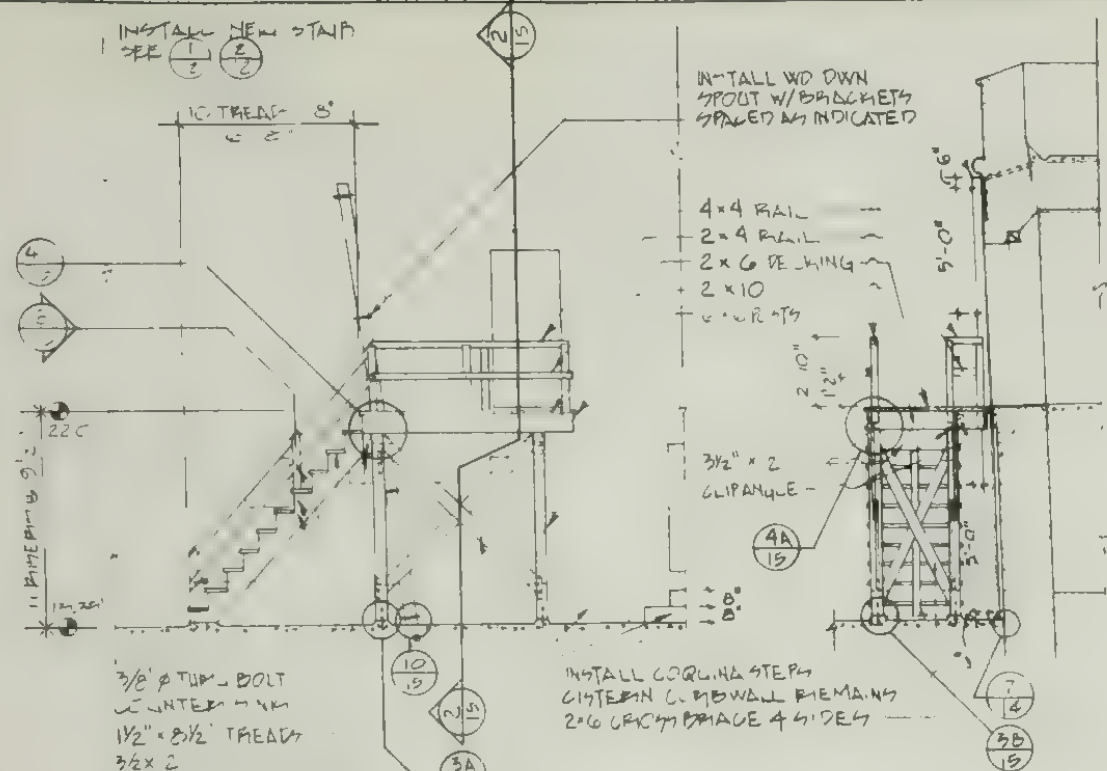
EXISTENCE OF FOUNDATION UNCONFIRMED

(DD) N. S. SECTION
14 SCALE 1/4" = 1'-0"



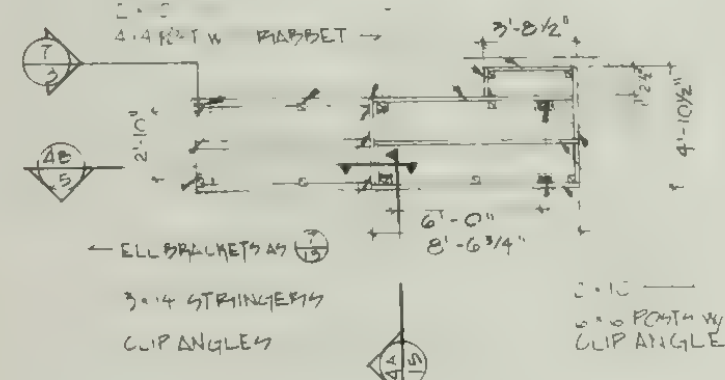
SECTION & DETAILS - PROPOSED WORK

PREPARED	DRAWING NO
CCF/RWC	347
DESIGNED	28,000
RWC	PKG NO
DRAWN	104
LOFLEUR	SHEET
CHECKED	14
6/79	OF 15
DATE	



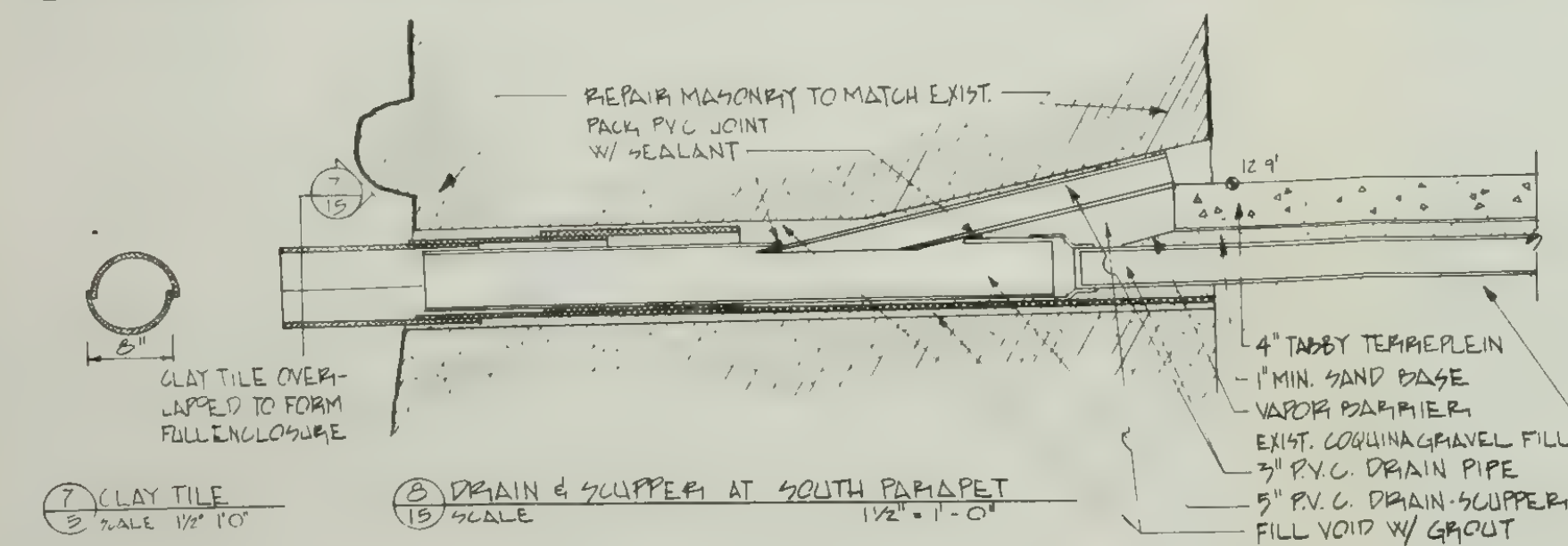
1 SOUTH ELEVATION - SECOND FL STAIR
SCALE: 1/4" = 1'-0"

2 SECTION - 2ND FL STAIR
SCALE: 1/4" = 1'-0"



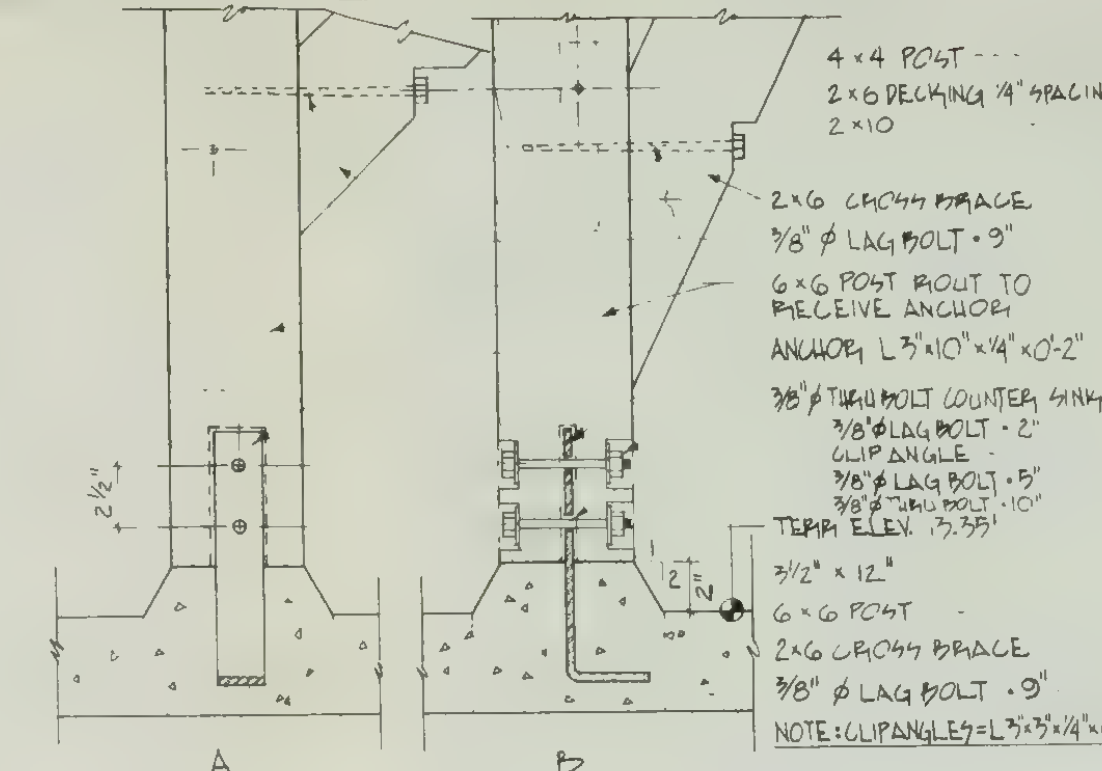
3 FRAMING PLAN - SECOND FLOOR STAIR
SCALE: 1/4" = 1'-0"

6 HAND RAIL @ POST - TYPICAL
SCALE: 6" = 1'-0"

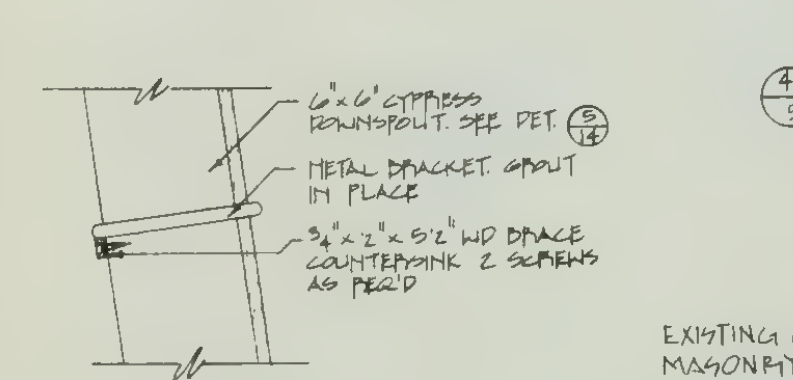


7 CLAY TILE
SCALE: 1/2" = 1'-0"

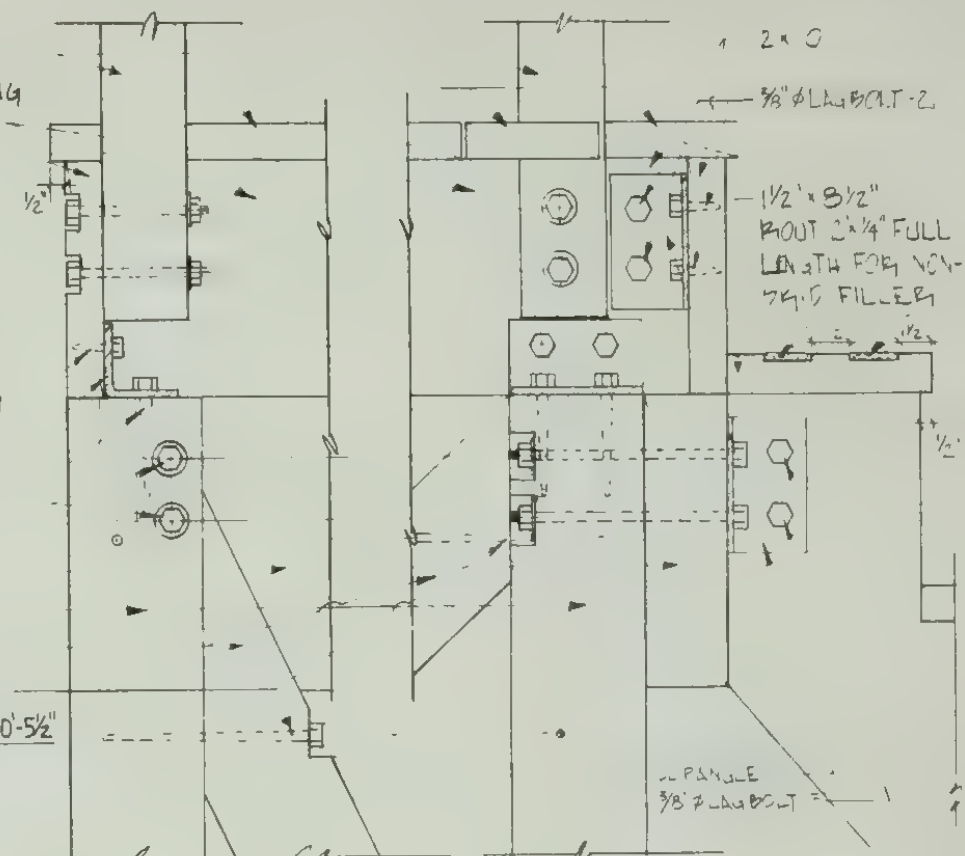
8 DRAIN & SCUPPER AT SOUTH PARAPET
SCALE: 1/2" = 1'-0"



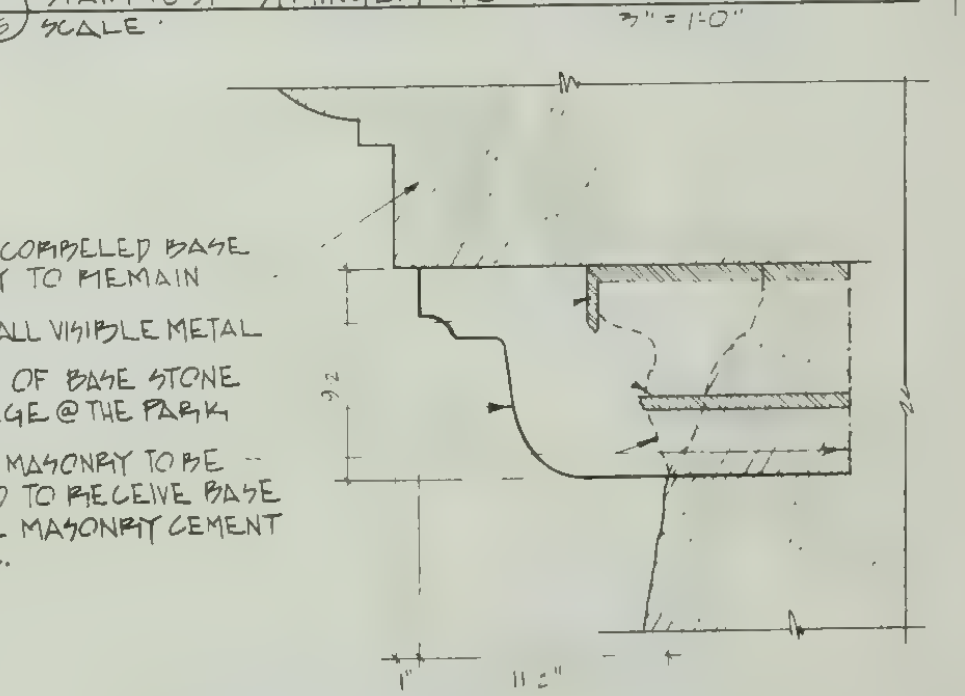
3 STAIR POST AT SILL - ALL POSTS 2ND FL. STAIR
SCALE: 3" = 1'-0"



10 DOWNSPOUT SUPPORT
SCALE: 3" = 1'-0"



4 STAIR POST - STRINGER & DECK CONNECTION
SCALE: 3" = 1'-0"



9 BASE STONE CONNECTION
SCALE: 1/2" = 1'-0"

DETAILS -
PROPOSED WORK

PREPARED	DRAWING NO
CCF/RWC	347
DESIGNED	28,000
CCF	PKG NO
DRAWN	104
LOFLEUR	CHECKED
6/79	DATE
	SHEET
	15
	OF 15

APPENDICES

APPENDIX A

Foundations on piling, from Bernard Forest de
Belidor's La Science des Ingenieurs (Paris:
1729), Book III, pp. 55-58, plate 8

l'on couvrira de pierres plates, ainsi tout le fond de la tranchée sera mis à sec, cependant pour prévenir que les sources ne deviennent par la suite nuisibles aux fondemens, il faut pratiquer dans la Maçonnerie des petits aqueducs, afin de leur laisser un cours libre du côté qui conviendra le mieux.

Il se trouve quelquefois qu'un terrain sur lequel on veut fonder ne se trouve pas bon, & que voulant approfondir pour en chercher un meilleur, on le rencontre encore plus mauvais; en ce cas, il vaut mieux ne s'enfoncer que le moins qu'on pourra, & établir sur toute la longueur des fondemens, un bon grillage assemblé avec des longrines & traversines de 9 ou 10 pouces de grosseur, les vuides ou cellules qu'elle forme se remplissent d'une bonne Maçonnerie de Brique ou de moilon; il y en a qui couvrent le tout d'un plancher de gros madriers bien arrêtés sur le grillage avec des chevilles de fer enfoncées à tête perdue, comme ce plancher paroît d'une dépense assez inutile, il suffit d'élever la Maçonnerie immédiatement sur le grillage, observant de faire le parement de bonne pierre de taille jusqu'au rez-de-Chaussée, & même plus haut si l'ouvrage en merite la peine. Comme ces sortes de fondations ne sauroient avoir de trop grands empattemens, il est bon de faire le grillage d'un pied & demi ou deux plus large que n'eussent été les fondemens, si on les avoit établi dans un bon terrain, & afin de prévenir tout accident, il convient d'attacher sur le bord du grillage du côté du fossé, un heurtoir de 8 ou 10 pouces au moins qui regnant sur toute la longueur des fondemens, empêchera que le pied du revêtement ne puisse glisser, sur tout s'il étoit assis sur un plancher, ce qui n'est pas sans exemple, à Bergue S. Vinoc, où le terrain est fort mauvais, il est arrivé que le revêtement de la face d'une demi-lune s'est détaché & a été glisser tout d'une piece jusques dans le milieu du fossé, cela s'est fait avec des circonstances si singulieres, à ce que j'ai appris par les Ingenieurs qui étoient alors dans cette place, que cet accident semble tenir quelque chose du merveilleux.

Cette façon de fonder n'est pas toujours bonne dans toute sorte de terrain, aussi ne l'employe-t-on guères que dans de petites parties de fondation qui n'étant point si bonnes que celles qui leur sont contigues, ne laissent pas la liberté d'approfondir davantage sans de grands inconvéniens, cependant on peut la rendre excellente dans un terrain aquatique, si après avoir posé le grillage, on enfonce dans les cellules, des pilots de remplage ou de compression sur toute l'étendue des fondemens, ces pilots doivent être plantés au nombre d'un ou deux seulement dans chaque cellule diagonalement

Fondemens avec des grillages.

Fondation sur pilots

oposez, & pour mieux assurer les fondemens, on pourra si on le juge nécessaire, battre tout autour du bord qui répond au Fossé, des pilots de bordage ou de gardes posez près à près, & le long de ces pilots un fil de palplanches pour empêcher le courant des eaux, s'il s'en trouve, de dégravoyer la Maçonnerie; les vuides du grillage autour de la tête des pilots, doivent être remplis de gros quartiers de pierre, & après les avoir bien arrassez, on asseoir la Maçonnerie élevée par assise réglée, afin qu'elle porte également par tout.

Autre ma-
niere de
fonder sur
pilots.
FIG. 1.
& 2.

Quoique cette maniere de fonder soit bonne, je crois pourtant qu'on ne feroit pas mal d'y changer quelque chose pour la rendre encore plus solide. C'est de commencer par enfoncer des rangées de pilots tout le long des fondemens, par exemple pour un revêtement de rempart, après avoir tracé l'épaisseur que doivent avoir les fondemens & les contreforts, on enfoncera au refus du mouton quatre rangées de pilots, une sur l'allignement extérieur, l'autre sur l'intérieur, & deux dans le milieu; en sorte que les pilots soient séparés les uns des autres d'environ deux pieds. On en plantera deux sous les angles des contre-forts, & deux autres entre la queue & la racine, comme on le remarque dans le premier profil, où les têtes de ces pilots sont ponctuées, après les avoir récépés à niveau on appliquera dessus des racinaux ou longrines, & sur ces longrines un rang de traversines pour former un grillage, dont chaque croisée sera bien clouée & arrêtée sur la tête du pilot qui lui répond, & selon cette maniere le grillage sera incomparablement plus ferme que dans la pratique précédente: après cela on enfoncera des pilots de remplage, & l'on pourra élever la Maçonnerie en toute seureté.

Attention
sur la ma-
niere de pi-
loter.

Quand on enfoncera des pilots, il faut avoir égard d'employer toujours les plus longs & les plus forts sur les bords des fondemens, puisque si l'ouvrage a quelque danger à craindre par la suite, ce sera plutôt de ce côté-là qu'il manquera, que dans le milieu: pour travailler avec précaution, il y a bien de petites attentions à faire sur la maniere de piloter, & pour ne rien omettre; voici comme on pourra s'appercevoir de quelle longueur & de quelle grosseur on doit employer les pilots selon le terrain où l'on aura à travailler.

Il faut enfoncer un pilot jusqu'au refus du mouton; en sorte qu'on puisse connoître à quelle profondeur le fond fait une assez grande résistance, pour s'opposer fortement à la pointe; ainsi sachant de combien il sera enfoncé, on verra à peu près la longueur qu'il faudra donner; je dis à peu près devant les faire un peu plus longs que celui qui aura servi de sonde, puisqu'il se peut rencontrer des en-
droits,

droits, où le terrain résistant moins, ils pourront aller plus avant.

La longueur des pilots étant déterminée, il faut pour y proportionner leur grosseur, qu'ils aient de diamètre environ la 12^e partie de leur longueur, c'est-à-dire, que ceux qui auront 12 pieds, doivent avoir environ 12 pouces de diamètre. Mais cette règle ne doit avoir lieu que pour les petits pilots depuis 6 pieds de longueur jusqu'à 12; car quand ils en ont 18 ou 20, il suffit de leur donner 12 ou 14 pouces de diamètre, autrement il faudroit employer des arbres trop recherchés; ce qui augmenteroit considérablement la dépense.

On sait que pour enfoncer les pilots, on les fait en pointe de diamant; il faudra prendre garde de ne point faire cette pointe trop longue ni trop courte: car si elle est trop courte elle ne s'enfoncera pas aisément, & si elle est trop longue elle se trouvera affoiblie, de manière que pour peu qu'elle rencontre des parties qui lui résistent, elle s'émoussera; le mieux est de lui donner pour longueur une fois & demi ou deux fois au plus le diamètre du pilot. Quand le terrain dans lequel on les enfonce ne résiste pas beaucoup, on se contente de brûler cette pointe pour la durcir, on en fait de même à la tête pour empêcher que les coups de mouton ne l'éclatent; mais si l'on s'aperçoit qu'il se rencontre dans le terrain des pierres ou quelque autre chose qui résiste fortement & en émousse la pointe, on l'arme d'un *subot* de fer qu'on nomme aussi *lardoir* qui est retenu par trois ou quatre branches clouées au pilot, l'on couronne aussi la tête du pilot d'une ceinture de fer que l'on nomme *frette*, pour la tenir serrée contre les coups de mouton, & pour lors l'on dit que les pilots sont *frettes*: l'on proportionne comme j'en ai déjà fait mention la distance des pilots à la quantité qu'on croit avoir besoin selon la qualité du terrain; mais au plus près qu'on puisse les mettre, il faut au moins qu'ils soient séparés l'un de l'autre de l'intervalle d'un de leur diamètre, afin qu'ils aient assez de terre pour les entretenir.

Quand on veut garnir les devans des Fondemens par des pilots de bordage, on y fait quelquefois des rainures qui se répondent diamétralement, dans lesquelles on introduit des palplanches, on choisit les pilots les plus droits que l'on équarrit pour être employés plus facilement, la largeur des rainures se proportionne à l'épaisseur des palplanches; mais on leur donne environ un pouce de plus pour qu'elles puissent s'y introduire sans difficulté, ainsi quand les palplanches ont deux pouces d'épaisseur, les rainures doivent en avoir trois de largeur sur deux de profondeur. On observera aussi que l'épaisseur des palplanches doit être réglée sur leur longueur, par exem-

ple si elles ont 6 pieds, elles doivent avoir au moins 3 pouces, si elles en ont 12 qui est ordinairement la plus grande longueur de ces sortes de bois, leur épaisseur sera de quatre pouces.

Pour assembler les Pilots avec les palplanches, on commence par enfoncer deux pilots à plomb à une distance proportionnée à la largeur des palplanches qui est le plus souvent de 12 à 15 pouces, ensuite l'on enfonce une palplanche avec le mouton pour la faire entrer à force entre les deux rainures, de façon qu'elle écarte tant soit peu le pilot; après cela on plante un autre pilot & une palplanche, l'on continue de la même manière à battre alternativement un pilot & une palplanche. Si le terrain résiste à la pointe des palplanches, on les arme d'un sabot de fer, & on les fiente aussi que les pilots.

Quoique de tout tems on se soit servi de pilots pour affermir un mauvais terrain, il se rencontre néanmoins bien des occasions où il seroit dangereux de les employer, par exemple s'il étoit question d'un endroit aquatique ou il y eut un grand nombre de sources, il ne faut pas croire que les pilots soient fort utiles pour y établir des fondemens; mais au contraire puisqu'on a remarqué qu'en les enfonçant on éventoit les sources, qui fournissoient de l'eau avec tant d'abondance, que le terrain devenoit incomparablement plus mauvais qu'il n'étoit auparavant: & ce qu'on trouvera assez extraordinaire, c'est qu'avant enfoncé des pilots à refus de mouton avec autant de difficulté que si ç'avoit été dans un bon fonds, on étoit étonné de voir que ces mêmes pilots étoient sortis de terre le lendemain ou quelques heures après, parce que l'eau des sources les avoient repoussés en faisant effort pour sortir, de sorte qu'il falut renoncer à s'en servir davantage, & avoir recours à quelques autres moyens beaucoup plus difficiles à exécuter, que ceux dont on auroit pu se servir d'abord, si au lieu de faire naître des difficultés, on avoit cherché à les prévenir, ce qui fait voir la nécessité de raisonner murement sur la nature du travail que l'on a à faire, avant de mettre la main à l'œuvre.

L'inconvénient que nous venons de remarquer arrive le plus souvent dans les lieux où l'on rencontre du Sable bouillant qui est un espece de terrain, qu'il importe fort de bien connoître: car comme l'eau qui bouillonne en sortant de terre quand on passe dessus ne vient que de l'abondance des sources qui s'y trouvent, il faut bien prendre garde de ne pas l'éventer en voulant s'y approfondir; puisque plus on voudra s'obstiner à y creuser des fondemens, moins l'on sera en état de les exécuter, le meilleur parti est

de ne s'y enfoncer que le moins qu'on pourra, & ensuite fonder hardiment & sans autre sujettion que celle que nous allons décrire.

Ayant tracé les alignemens & fait les amas de matériaux nécessaires, on ne découvrira le terrain qu'à mesure qu'on fera la Maçonnerie ; c'est-à-dire que si on peut faire par jour 6 toises courantes de fondemens, on n'en découvrira pas davantage ; ensuite l'on assésora avec le plus de diligence qu'il sera possible une première assise de gros libages plats, & sur celle-ci une autre bien arrangée à joints recouverts en bain de bon mortier composé de terrasse ou bien de cendrée de Tournay, sur cette seconde une troisième, ainsi de suite avec toute la promptitude possible, pour ne pas donner le tems aux sources d'inonder le travail comme cela est assez ordinaire. Il arrive quelquefois que l'on voit flotter les premières assises, & que la Maçonnerie semble ne pouvoir prendre consistance ; mais il ne faut pas s'en allarmer, aller son train & continuer toujours s'il est possible sans interruption, & quelque tems après la Maçonnerie s'affermira comme si elle étoit établie sur le roc, c'est pourquoi l'on peut élever le reste sans appréhender que l'ouvrage manque par le pied, ni que les fondemens s'enfoncent guères plus, après avoir reçus toute leur charge, qu'ils l'étoient au commencement ; il faut seulement prendre garde sur toute chose de ne pas creuser autour crainte d'y attirer l'eau de quelque source qui pourroit dégrayer la Maçonnerie, & causer de grands dommages, enfin je dirai pour justifier cette manière de fonder, qu'on ne s'y prend pas autrement à Douay, Lille & Bethune, quand il est question de revêtir quelque ouvrage de Fortification dans un terrain comme celui-ci qui y est assez ordinaire.

Fondation
sur le sable
bouillant.

A Arras & à Bethune, il y a encore un terrain tourbeux qu'il est nécessaire de connoître pour pouvoir y fonder hardiment : ayant cela de particulier, que dès qu'on veut creuser un peu avant, il en sort une quantité d'eau prodigieuse. Après avoir tenté toutes sortes de voyes, on a trouvé que le plus court & le plus sûr parti étoit d'y fonder hardiment avec de bons matériaux ne s'enfonçant que le moins qu'il est possible sans employer ni grillage, ni pilots, & l'ouvrage se maintient ferme & solide sans courir aucun risque.

Quand on rencontre de semblables terrains que l'on ne connoît point parfaitement, il est bon de ne le fonder qu'à une certaine distance de l'endroit où on le veut travailler, parce que si l'on venoit à creuser trop avant & qu'il en sortit une grande quantité d'eau, on n'en fera pas incommodé. C'est ici où je crois qu'on pourroit se servir mieux que par tout ailleurs de la Maçonnerie de pierres dont

H ij

APPENDIX B

ORDANCE MATERIAL AT FORT MATANZAS, 1784-1821

APPENDIX B

ORDNANCE MATERIAL AT FORT MATANZAS, 1784-1821

"By order of Señor Don Enrique White, colonel in the Royal armies and political and military governor of this said City (of St. Augustine) and its Province, I, Francisco Moscoliny, corporal first class of the 3rd Battalion of the Infantry Regiment of Cuba, received from Sergeant Miguel Marcos, Royal Corps of Artillery, the weapons, stores, and munitions shown, in order to put Castillo de Matanzas in (a state of) defense, to wit:

Two cañones de calibre de a ocho largos
(8-pounder long cannons)

Two cureñas de calibre de a ocho completas
(complete 8-pounder carriages)

Two almohadas or cojinetes (?)

Four cuñas de puntería (aiming quoins)

Twelve espeques labrados (wrought handspikes)

One curchara enastada de a ocho (8-pounder ladle
with staff)

Two atacadores de idem. (8-pounder rammers)

Two lanadas de idem. (8-pounder sponges)

One sacatrapos de idem. (8-pounder worm)

Two cubichetes (roof-shaped, wooden vent covers)

Two plomadas de lona alquitranada (tarred-canvas
vent covers)

Two guardafuegos, el uno de madera (pass boxes,
one of them of wood)

Two chifles (priming flasks)

APPENDIX B -- continued

Two botafuegos (linstocks)

Two barrenas o agujas para desembarazar los fogones (vent drills or vent picks)

Fifty cartuchos de lanilla (flannel-cased charges)

One hundred tacos de dicho calibre (8-pounder wads)

One medida de cobre para pólvora de a una libra (1-pound copper measure for gunpowder)

Two encerados de carga (small tarpaulins)

Ten pounds of cuerda mecha (matchcord)

Twenty six balas del calibre de a ocho (8-pounder round shot)

Twenty four cartuchos de hoja de lata con metralla de a ocho de hierro (8-pounder sheet metal-cased charges of iron grapeshot)

One pala (shovel)

One azada (hoe)

One machete (machete)

One farol de talco (ordinary lantern?)

One linterna secreta (dark lantern)

Two pounds of velas (candles)

One cuchillo flamenco (Flemish knife)

One martillo de oreja (claw hammer)

One hundred fifty pounds of pólvora (gunpowder)

Four cajones de envase (wooden packing boxes)

APPENDIX B - - - continued

One serón (seroon, a hide-covered chest)

Note: The iron grapeshot charges listed in this document are (actually) of lead.

Matanzas, December 12, 1796.

(sgd.) Francisco Moscoliny"

"Recibo," Dec. 12, 1796, EFP, 131/237

APPENDIX C

THE FURNISHINGS OF FORT MATANZAS, 1784-1821

APPENDIX C

THE FURNISHINGS OF FORT MATANZAS, 1784-1821

On April 1, 1818, an officer surnamed Truébano arrived at Fort Matanzas to take command from an officer named Bunique. Following operating procedure, the two officers jointly inventoried the furnishings present, recorded the result on paper, and both signed it. Bunique turned over to Truébano the property listed below:

One anteojo (spyglass)

One canoa con su boza (dugout with painter)

Two remos para idem. (oars for the dugout)

One canalete (paddle)

One cubo con su sogá (bucket with line)

Two barriles para traer agua (water casks)

One escalera chica inútil (unserviceable short ladder)

One escalera grande (long ladder)

One mesa (table)

One banco (bench)

One candelero de metal (metal candlestick)

One zambullo (Latrine bucket)

Two azadas viejas sin mango (old hoes without handle)

One hacha para partir leña (axe for chopping firewood)

One pabellón sin escudo (flag without coat of arms)

APPENDIX C --- continued

One driza de idem (halyard for the flag)

One tablado para la tropa (wooden platform for the troops)

"Torreón de Matanzas. Inventario de los Utensilios que existen en este destino y entrega el Oficial saliente al entrante. . .," April 1, 1818, EFP, 151/20.

This is not the complete picture of furnishings at Fort Matanzas during the second Spanish period. Other items show up in correspondence, but not always appear on inventories upon transfers of command. Information recorded on the various kinds of documents must be obtained for a satisfactory picture on the subject.

APPENDIX D

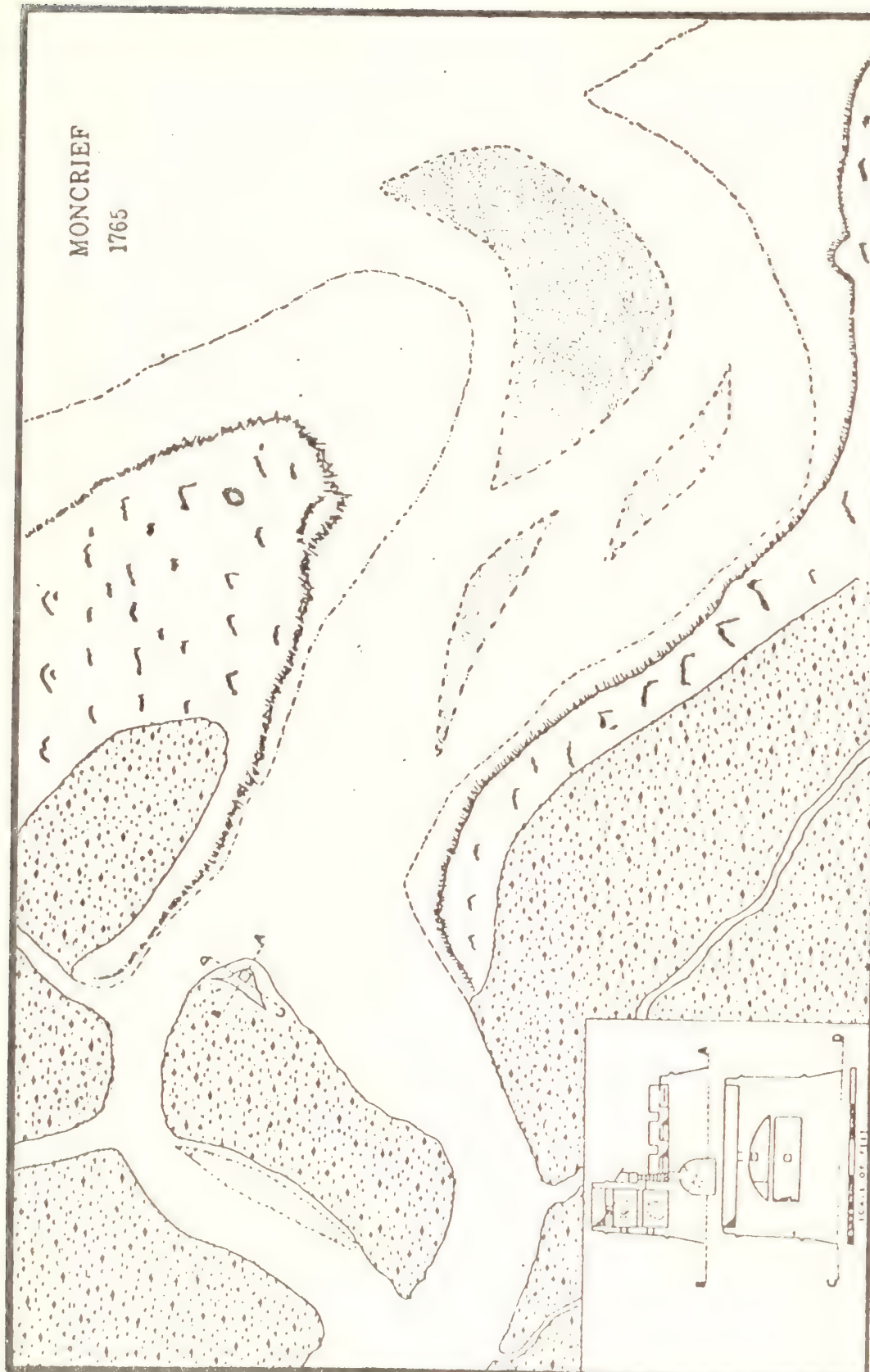
CHRONOLOGY OF HISTORICAL DEVELOPMENTS OF
FORT MATANZAS WITH GRAPHIC RECORDS

APPENDIX D

CHRONOLOGY OF HISTORICAL DEVELOPMENTS OF FORT MATANZAS WITH GRAPHIC RECORDS

The Historical Data Section provides a detailed account of Fort Matanzas as it evolved through the first Spanish period, the British occupation, the final Spanish years, administration by the U.S. War Department, the St. Augustine Historical Society and the National Park Service. In this chapter, a summary of renovations, deteriorations and stabilization actions is offered with illustrations which provides an evolutionary synopsis of the building. Whereas five ownership/administrative periods are employed within the Historical Data Section, the following summary is divided into three. The first, 1742-1821, covers the functional life of the Watchtower while still an active military installation. The second time period, 1821-1916, includes the ruination of the abandoned building during its century of decay. The third and most lengthy section, 1916-1978, covers the many actions taken to stabilize the Watchtower and make it presentable to the visitor.

MONCRIEF
1765



0 1600 FEET

ILLUS. D-1 A PLAN OF THE FORT AND HARBOUR OF
MATANZAS DISTANT FROM ST AUGUSTINE FIVE LEAGUES

Public Record Office
Colonial Office 5/540

CHRONOLOGY OF HISTORICAL DEVELOPMENTS OF FORT MATANZAS

I. Functional Occupation:

- 1738 British threat--siege and Spanish recognition of need for "perminant" watchtower.
- 1740-42 Construction of the perminant coquina Watchtower at the Matanzas Inlet.
- 1742-63 First Spanish period of occupation and maintenance (see Illus. 13 and 14 for images of historic appearance). (Five guns mounted.)
- 1763-84 Period of British occupation, undocumented maintenance occurred, some remodeling may have occurred.
- 1765 Two six-pounders mounted by British.
- 1765 Moncrief maps inlet and provides image of Watchtower (see Illus. D-1).

Illustration D-1 (opposite page)

A Plan of the Fort and Harbour of Matanzas Distant from St. Augustine Five Leagues, 1765, Moncrief, Public Record Office, Colonia Office 5/540.

This map well illustrates the strategic orientation of the Fort facing the main channel of the Inlet 1,000 yards away.

Insert-Sections Through Fort.

Notice the height of terrplein east parapet (perhaps at the standard 6 feet) such that firing steps are provided. Note, also that terreplein and first floor room are at similar elevation.

- 1783 Two eighteen-pounders mounted, parapet refurnished with earth-filled cedar merlons.
- 1784 Spanish return to occupy outpost of Fort Matanzas and mounted two six-pounders.
- 1785 No repairs recorded.
- 1786 Entrance ladder was repaired.
- 1787 No repairs recorded.
- 1788 No repairs recorded.
- 1789 New pine entrance ladder installed and new wood drain pipe to cistern built.
- 1790 No repairs recorded.
- 1791 No records.
- 1792 Repairs included ladder work, wooden merlons removed leaving the guns mounted in barbette, wooden doors repaired, four broken steps of stairway to second story were replaced, and broken hinges of a window replaced.
- 1793 New surface on terreplein installed to provide sound base for the mounting of two eight-pounder iron cannon. (Possibly wooden gun platform; see 1806.)
- 1794 Roof and cistern were cleaned to assure purer drinking water.
- 1795 No repairs recorded.
- 1796 Undermining of foundation reported and unspecified action taken by Master Mason Clemente de Salas. (See Appendix G--"Archeology Investigation" for further speculative discussion.)
- 1797 "Pump" at cistern replaced, new entry ladder installed.
- 1799 Rainwater leaking profusely through roof and vault next to chimney reported; chimney "bricks" falling loose. A wooden parapet on east wall had been carried away by wind; tabby surface of roof was replaced; a new stairway

with hand rail to second floor built; interior walls partly replastered, chimney repaired, missing stones of the east and south scarp foundation walls replaced and a new entry ladder installed.

- 1800 Another new entry ladder installed.
- 1801 Rainwater leakage again severe problem; the scuttle hatch was replaced.
- 1802 The frame and door of the powder magazine was rebuilt (probably remodeled to keep water out).
- 1803 New cover for cistern installed.
- 1806 Terreplein had deteriorated, had been covered with planks which by this date were also dysfunctional; so a new, fourteen-and-one-half inch thick tabby surface was installed (16 Spanish inches).
- 1809 Part of second floor near the chimney caved in damaging the flue and leaving a hole in the officer's quarters; so, repairs were made restoring the tabby floor and chimney flue and a partition with one door (to separate the officer's quarters) was constructed. Additionally, both first and second floor interior walls were replastered.
- 1810 Replacement of seven feet of wooden drainage pipe between roof and cistern.
- 1811-21 No repairs made although requested; deterioration continued including increasing leakage of tower roof and erosion of foundations on the east front.
- by 1818 Shear cracks on tower parapets and vault and foundation undermining reported (Engineer Francisco de Cortazar recommends removal of second story of tower).
- by 1819 The fort needed foundation work, new floor surfaces, replastering of interior walls, repairing of entry ladder, three windows and two doors. In addition, the cistern water supply was reduced drastically because of the condition of the leaking roof and wooden downspout. The flag pole fell down this year.
- 1820 Engineer Ramon de la Cruz, reported a deteriorated condition and recommended the garrison be removed to tents near the out post (see history for details).

II. A CENTURY OF DECAY:

1821 Plano N^o 5. Torre de Matanzas con su barra, 1821 map
and drawings by Engineer de la Cruz. (See Illus. D-2)

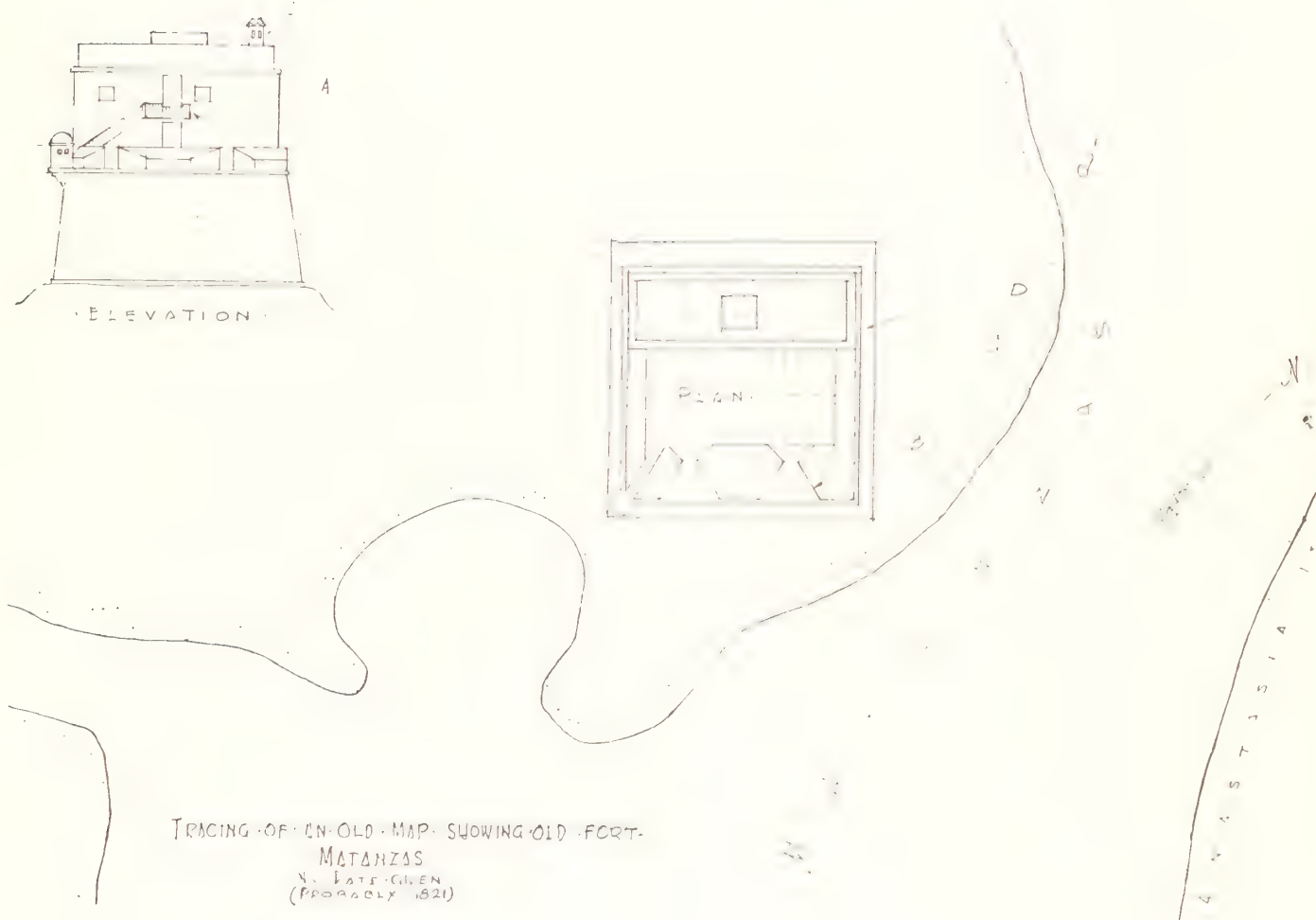


Illustration D-2

Ramón de la Cruz, N^o 5, Torre de Matanzas con su barra, June 4,
1821, National Archives

This plan and elevation may have been drawn by de la Cruz but
contradicts parapet changes reported in 1792.

- 1821-42 Unoccupied, continues to deteriorate.
- 1843 Lt. Henry W. Benham examines the building and provides drawings. (See Illus. 6 and 12)
- 1843-72 No records, continues to decay.
- 1872 Harry Fenn visits Fort Matanzas and makes sketches. (See Illus. D-3)



Illustration D-3

Fort Matanzas published in Picturesque America, 1872, (Photo M-42)

Note missing sentry box and south terreplein parapet at height lower than east and west parapets.

- 1872-80 No records, continues to decay.
- 1880s Tourists are enticed to visit the picturesque ruin
by tour guide books containing drawings and photographs.
(See history p. 92)
- 1883-1912 Construction of Florida East Coast Canal (Intercoastal
Waterway as of 1929) east of Rattlesnake Island.
- 1885 Second Lt. George I. Scriven examines the Spanish relic,
provides measurements and recommends repairs to save
the building.
- 1885-1916 Continues ruination as discussions go on concerning
possible stabilization actions.
- 1911 Canal west of fort site dredged and several islands
connected forming Rattlesnake Island.
- 1912 Unknown visitor takes photos.



Illustration D-4

Fort Matanzas, July 23, 1912, (Photo M-54)



Illustration D-5

Fort Matanzas, July 23, 1912, (Photo M-55)



Illustration D-6

View of Terreplein and South Face of Tower, circa. 1914, (Photo M-168)

Note faint outline of a fourth loophole to the right of the three clearly visible.



Illustration D-7

Fort Matanzas, 1915, National Archives.

Photograph by District Engineer Ladue



Illustration D-8

Detail of Réduit Vault, 1915, National Archives.

This close-up, by Ladue, shows the construction of the vault. Note that the fill above the vault and roof have eroded away.

III. RUIN STABILIZATION PROGRAMS:

July 1916 \$1,025 is allotted for the stabilization of Fort Matanzas National Landmark. These repairs, the first authorized since 1811, were undertaken by Bud Deyo and included removal of some vegetation (oak, cedar and myrtle) and rubbish from parapets and terreplein; wedging and cementing vault stones back into place and replacing sand fill above; dismantling and rebuilding much of the south face of the tower; drawing in the masonry on the north face of the tower and filling the major shear cracks; and placement of steel tie rods in both north-south (1) and east-west (2) directions. These actions included rebuilding of all window and door frame masonry except the west window of the first floor. A loophole was omitted from the first floor. An additional allotment of \$132.60 was provided in 1916-17 to complete the tower stabilization job including the reconstruction of concrete floor and coquina partition at west end of second floor and placement of concrete under northeast corner. Also, repair to west scarp wall, positioning of 2 cannon and providing a walkway to boat landing.



Illustration D-9

View of Fort Matanzas, 1916, (Photo M-70)

Taken after tower stabilization but prior to vegetation removal.
Note construction bracing yet to be removed.



Illustration D-10

View of Tower Deck, 1923, National Archives

The condition of Fort Matanzas was documented by War Department personnel in April 1923. In this view we can see the irregular masonry of the 1916 repair to the south parapet (left). Much vegetation is still present. The scuttle curb wall is intact and like parapet walls, plastered. It also appears to have a special shape along its north and south edges--perhaps to accommodate the once existing hatch or hatch "house."



Illustration D-11

Detail of South Scarp, April 1923, National Archives



Illustration D-12

Detail of East Scarp, April 1923, National Archives

Feb. 1924 \$2,375 is allotted and Bud Deyo once again hired to perform stabilization work including: dismantling the south half of the east scarp and 2/3 of the south scarp and their rebuilding; coquina-concrete resurfacing of both terrepleins and construction of boat landing. Also, between August and October, Eugene Johnson was paid to place 3,825 barrels of oyster shells around the foundation walls. (\$51.90 had to be added to the original allotment to cover this job which cost \$450.)



Illustration D-13

Dismantled East Scarp During 1924 Reconstruction (Photo M-76)

Notice tie rod end plates near tower cordon on east face as placed in 1916 preservation project. Also, notice iron cannon lying on terreplein as reported as early as 1885 by Scriven.



Illustration D-14

Dismantled South Scarp During 1924 Reconstruction (Photo M-76)

Contractor Bud Deyo is pictured here at the foot of the fort. It is interesting that the marsh mud fill of the base is dry enough to have cracked along with the shear failure of the south salient. It appears that the scarp wall is mostly rubble fill with cut stones forming the exterior face.



Illustration D-15

Fort During 1924 Reconstruction Work (Photo M-81)

In this view, we see the reconstructed scarp walls and parapet raised to receive the third and final course of stones. Due to the damage resulting from shear failures, Deyo apparently didn't realize that the east parapet once rose higher than the south. Thus, he erected both walls simultaneously to the same elevation.



Illustrations D-16 and D-17

Fort After 1924 Reconstruction, National Archives

These views illustrate the preservation work accomplished by Bud Deyo in 1916 and 1924. The tower has been reassembled and tie rods employed to hold it together; the east salient rebuilt and terreplein parapets reconstructed. However, the east parapet should have been at least one course of stone higher than the south and should have included a second embrasure. Visitor access, at this date, is provided by a ladder to the sentry box base. An iron cannon can be seen at the east embrasure.

- 1925-26 Ladders were installed, weeps (with scuppers) put in, weeds eradicated from terreplein and scarp walls repointed.
- Dec. 1926 First reconstruction of sentry box; 4" concrete layer applied to both terreplein and tower deck; interior repointing using brick shims, including repairs to fireplace and some unspecified floor treatment in the tower first floor.



Illustration D-18

View of 1926 Reconstructed Sentry Box from Terreplein

This reconstruction used brick and coquina-concrete to produce an appearance which was quickly judged inappropriate.



Illustration D-19

View of 1926 Reconstructed Sentry Box, Exterior View, August 1929,
(Photo M-14)

In this documentation of the first reconstructed sentry box in August 1926, we are offered a detailed view of the historic masonry coursing employed by the Spanish. This portion of the south scarp was not disturbed by Deyo.

Nov. 1927 Concrete curb stones were positioned to cover 30 square yards of shore line adjacent to the southeast corner. Also, additional tie rods were placed north-south, scarp walls were repointed (Aug.-Sept.) and entry stairs and ladder installed by cutting a gap through the south parapet of the terreplein.



Illustration D-20

View of Fort with Oyster Shell Protection at Base and New Access Ladders, Between 1925 and 1929, (Photo M-12)

Taken about 1928, this photograph shows the Fort open to visitation after the preservation undertaken between 1916 and 1927. The ladder access visible here was supplemented by an additional ladder or stair inside going to the reconstructed concrete floor at the second level of the réduit. (See H.A.B.S. drawings, Illus. 24.)

- July 1929 The reconstructed sentry box was reported to be breaking away from parapet and scarp walls.
- Dec. 1929 The sentry box was dismantled and rebuilt for the second time of coquina block using steel for reinforcement and to attach it to existing parapet walls.

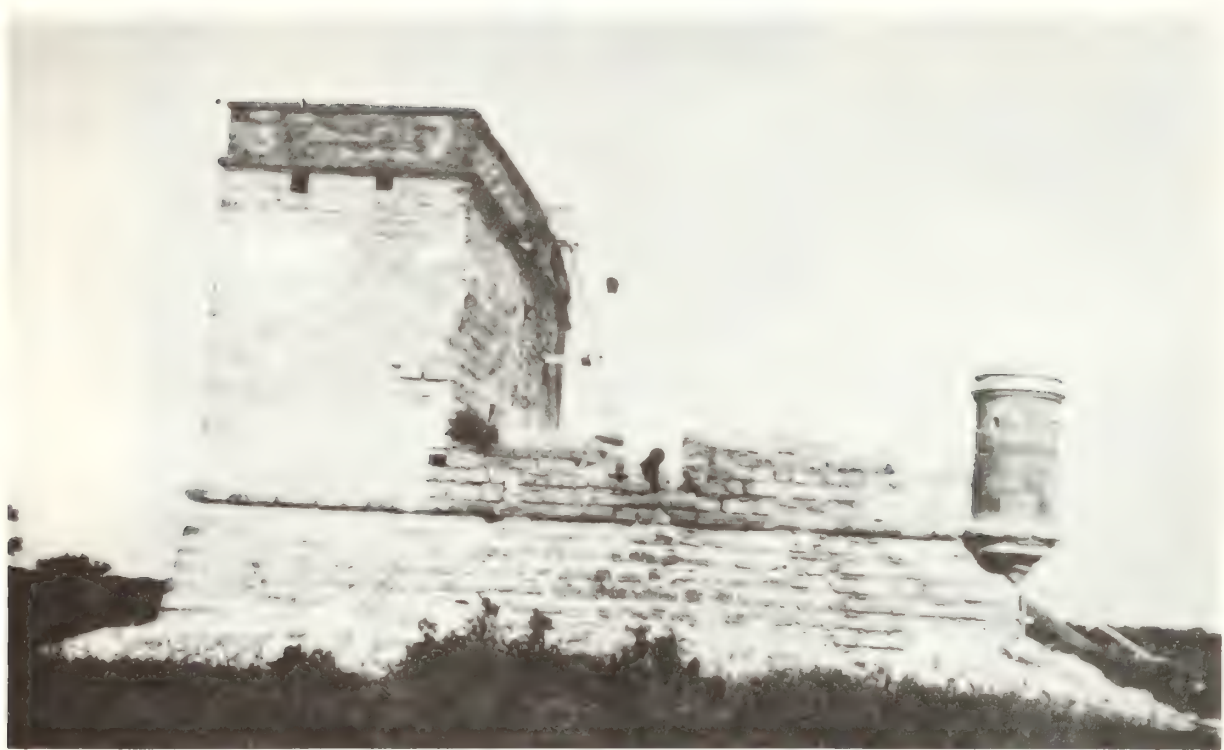


Illustration D-21

View of 1929 Reconstructed Sentry Box, 1930, National Archives

This photograph was taken January 11, 1930, and shows the newly completed sentry box still present today.



Illustration D-22

View of 1929 Reconstructed Sentry Box from Terreplein, (Photo M-381)

Notice the iron lintle ring visible at the doorway which has deteriorated and is no longer present.

- Jan. 1930 The three additional north-south tie rods of 1927 were properly secured to end plates although not immediately covered with coquina facing stones.
- 1930-33 No major action undertaken at fort except painting the two cannons. Intracoastal Waterway west of island was widened and deepened (November 6, 1931 to January 19, 1932 and summer 1933) and spoils were dumped, in part, on Rattlesnake Island.
- Nov. 1934 A dike was constructed to breach the gap separating
to the northern and southern sections of Rattlesnake Island--
May 1935 increasing tidal current in the Matanzas River.



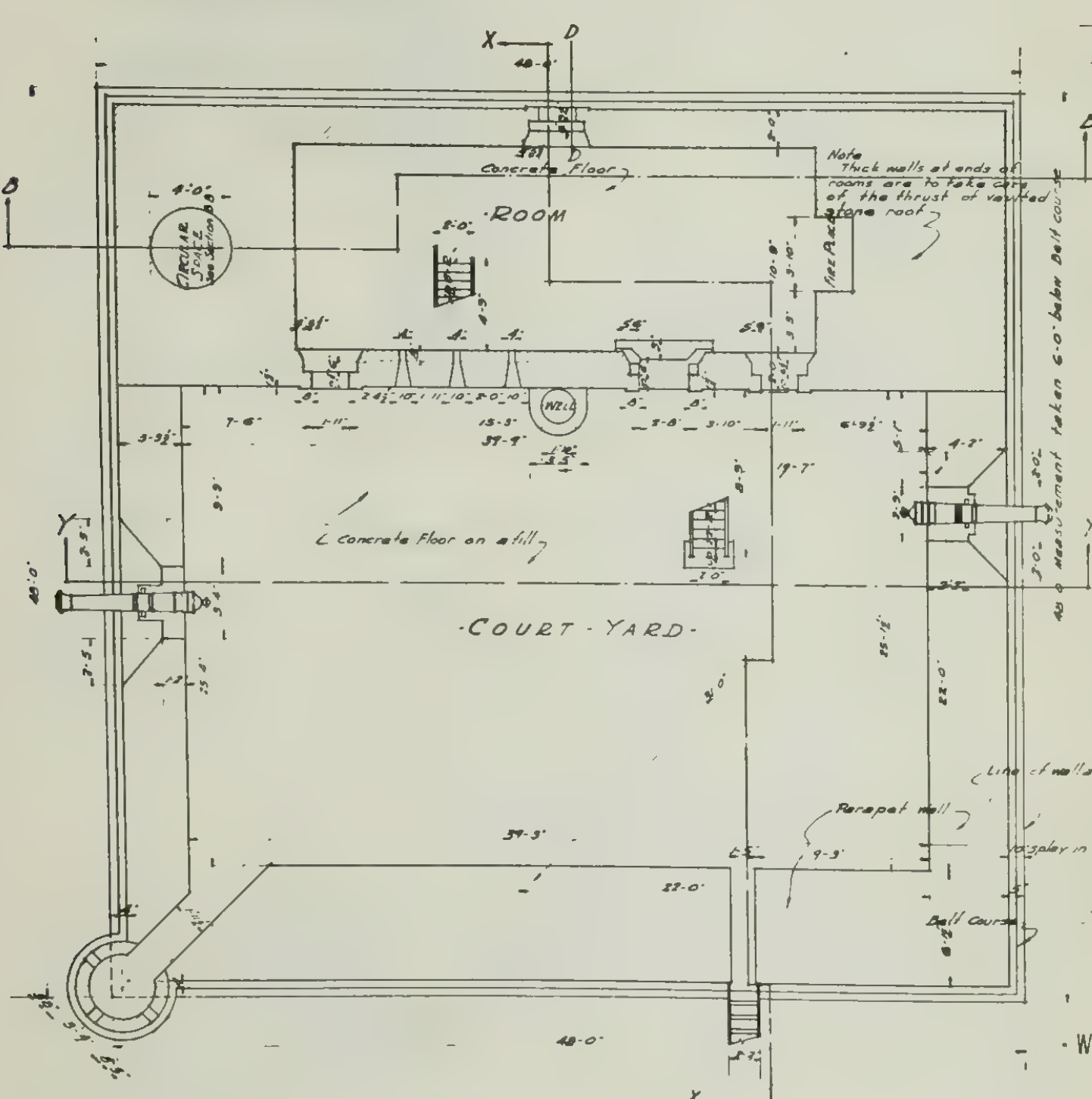
Illustration D-23

View of Fort with Oyster Shell Protection at Base and New Access Ladder with Second Reconstructed Sentry Box, 1933, (Photo M-246)

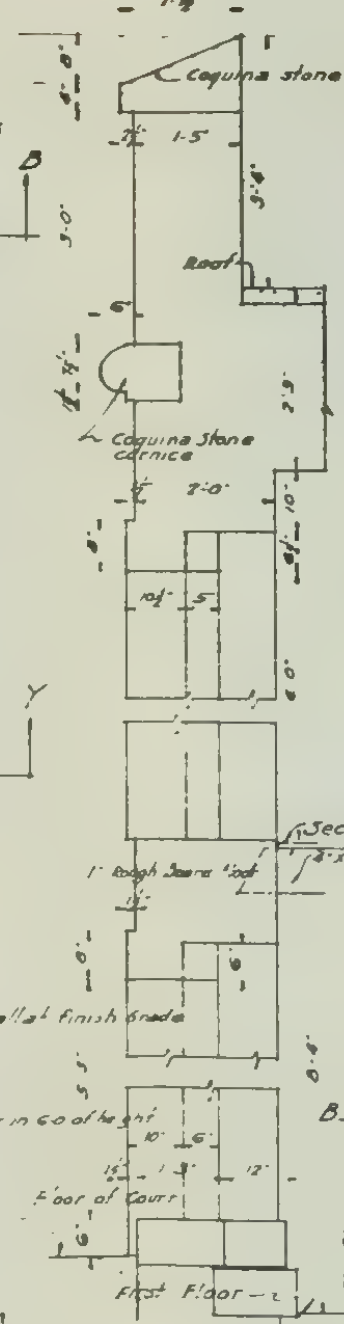
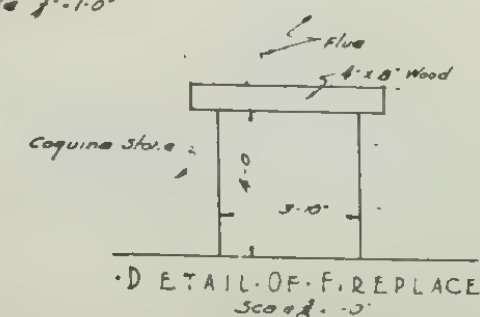
Note three north-south tie-rod end plates in place (1927-30) but exposed, as well as two east-west tie-rod plates of 1916 work.

1934

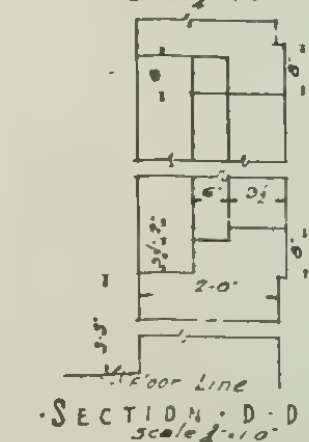
Removal of outside ladder to observation tower. Reports in this year indicated dangerous cracks and vegetation on the tower roof. Restoration suggestions were provided by Thor Borresen and subsequently the Historical American Building Survey (H.A.B.S.) prepared measured drawings (Illus. D-24, 5 sheets). The H.A.B.S. investigation also indicated failure of the vault occurring and undermining of the southeast corner of base scarps.



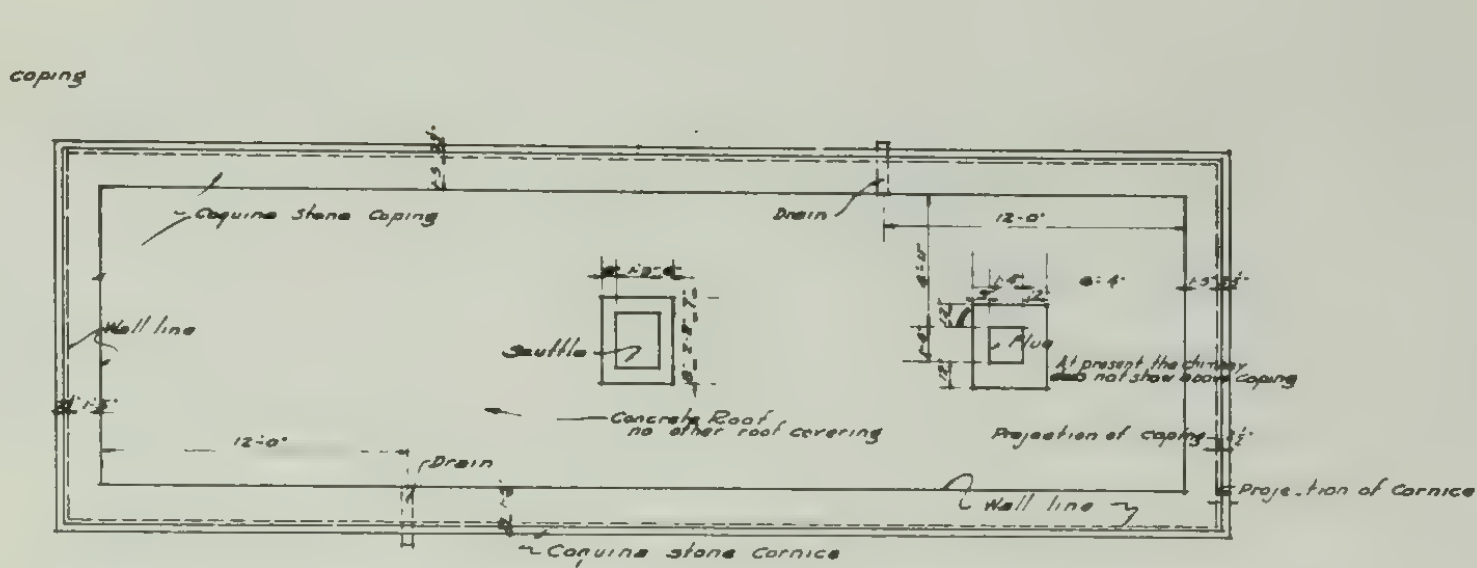
• FIRST FLOOR PLAN •
Scale 1/4" = 1'-0"



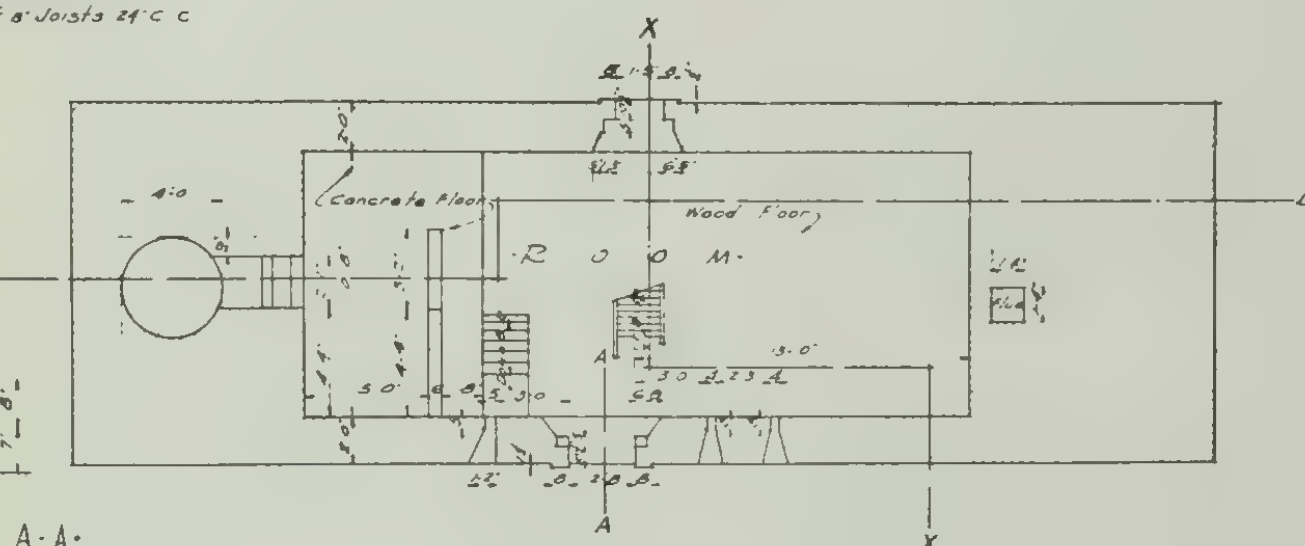
• WALL SECTION A-A •
Scale 1/4" = 1'-0"



• SECTION D-D •
Scale 1/4" = 1'-0"



• ROOF PLAN •
Scale 1/4" = 1'-0"

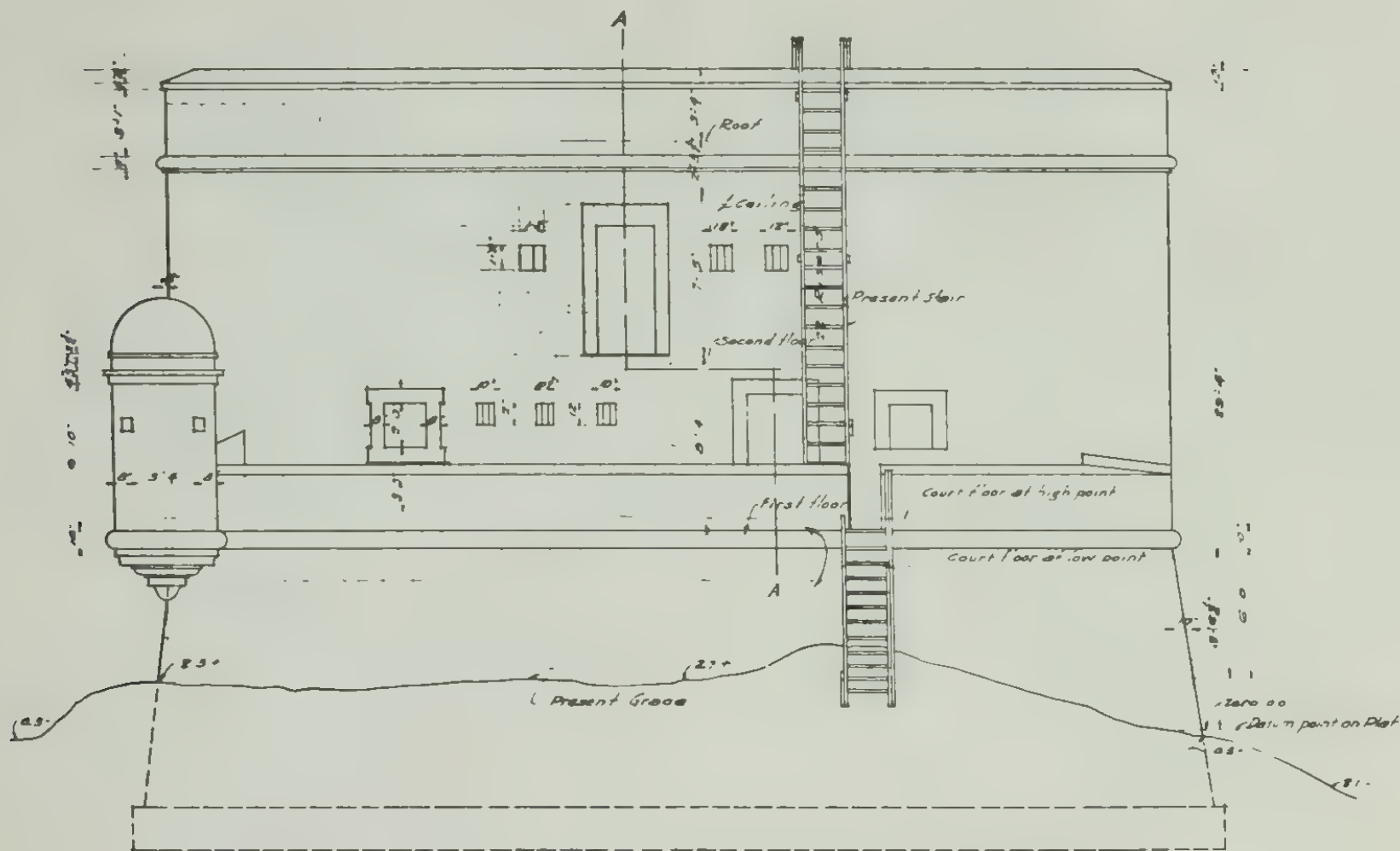


• SECOND FLOOR PLAN •
Scale 1/4" = 1'-0"

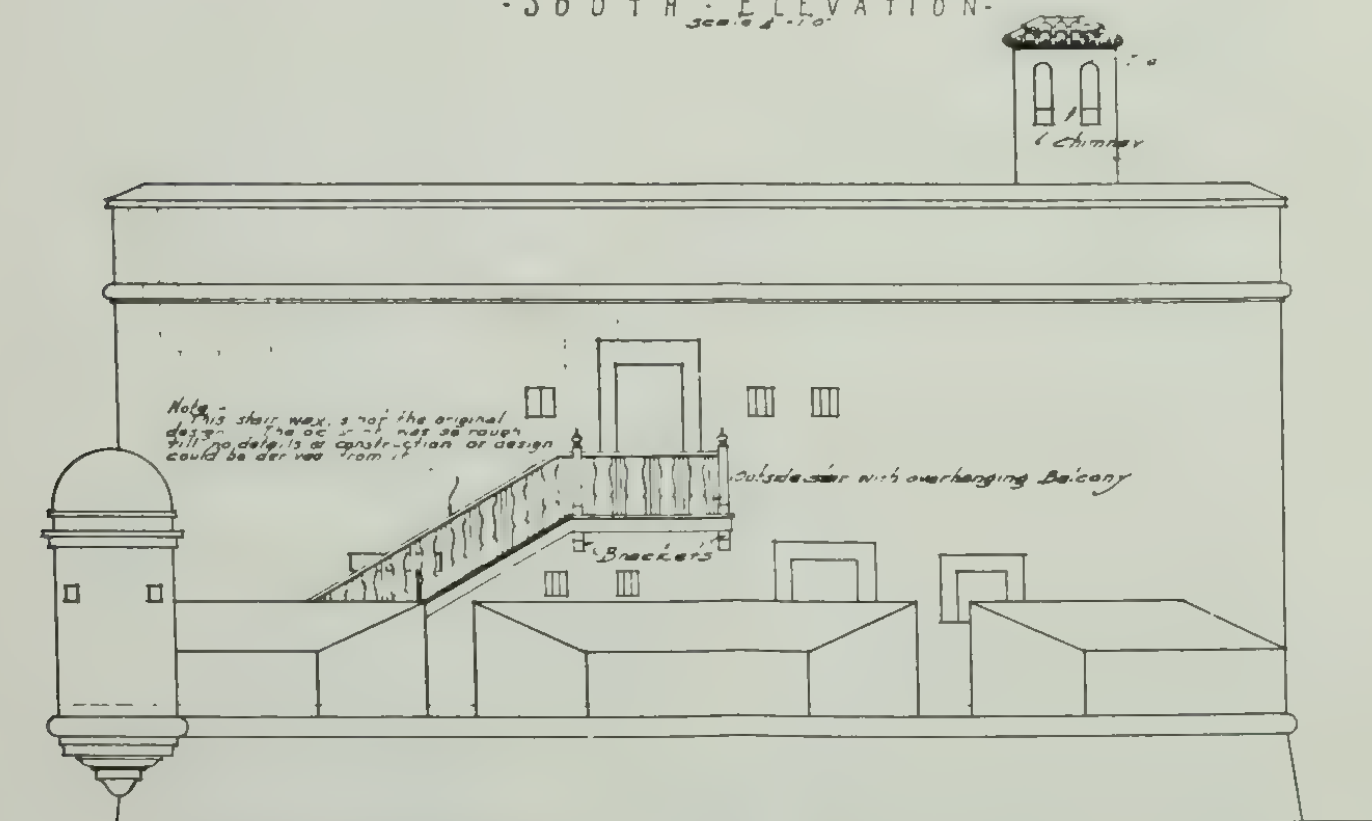
HALF-SIZE REPRODUCTION

HISTORIC AMERICAN BUILDING SURVEY DRAWING
1 of 5

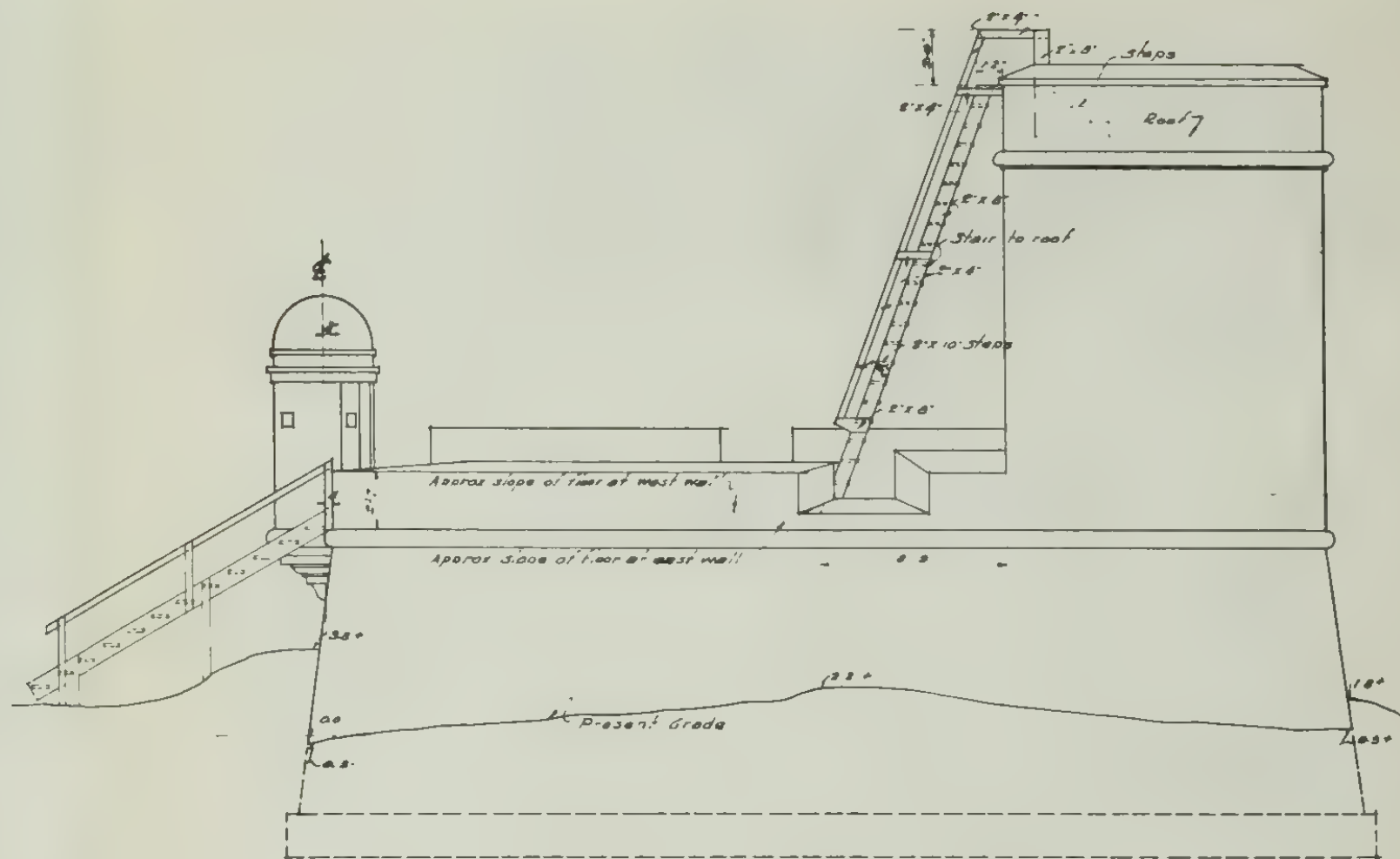
PLANS & WALL SECTIONS		
Drawn by EBM	MEASURED DRAWINGS	DATE JUL 19 1963
Checked by EBM	OLD FORT MATANZAS ST. AUGUSTINE, FLA.	JOB NO. 101
Overseen by H.K.	MR. H. KAHLER, OFFICE OF NAT. PKS. BLDGS. & RES.	Scale 1" = 1'-0"



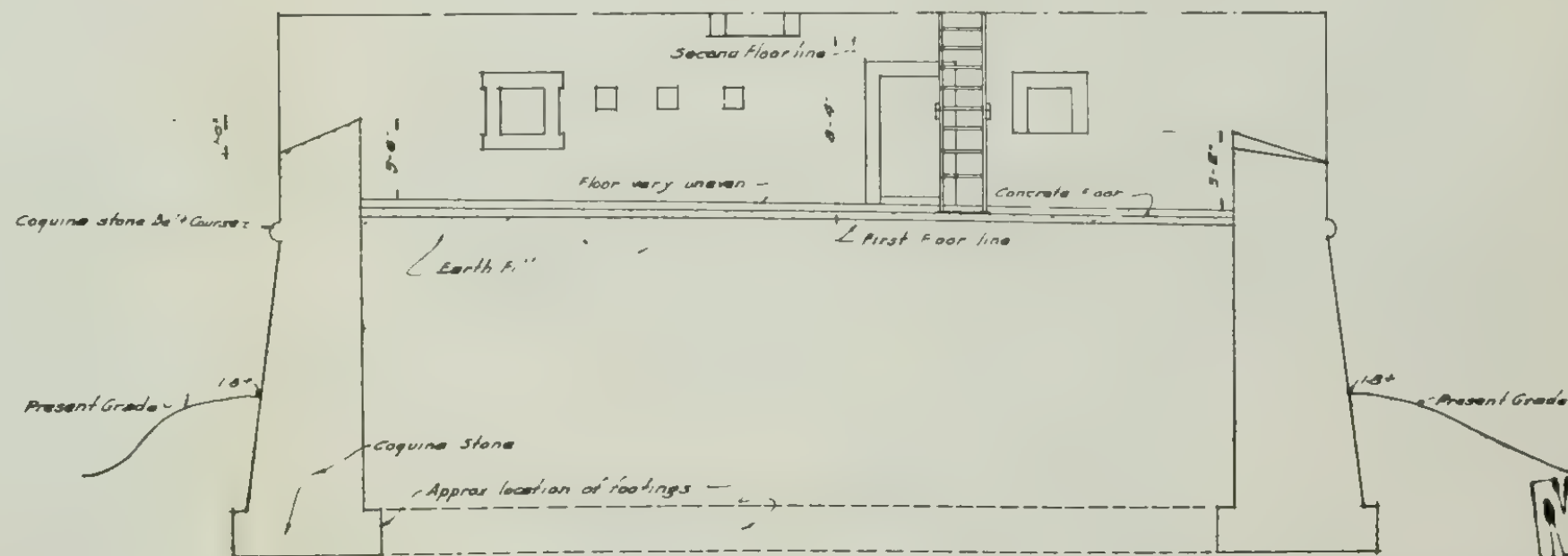
PRESENT
SOUTH ELEVATION
Scale 1/4" = 1'-0"



SOUTH ELEVATION - TAKEN FROM AN OLD DRAWING OF
THE SPANISH PERIOD
Scale 1/4" = 1'-0"



EAST ELEVATION
Scale 1/4" = 1'-0"



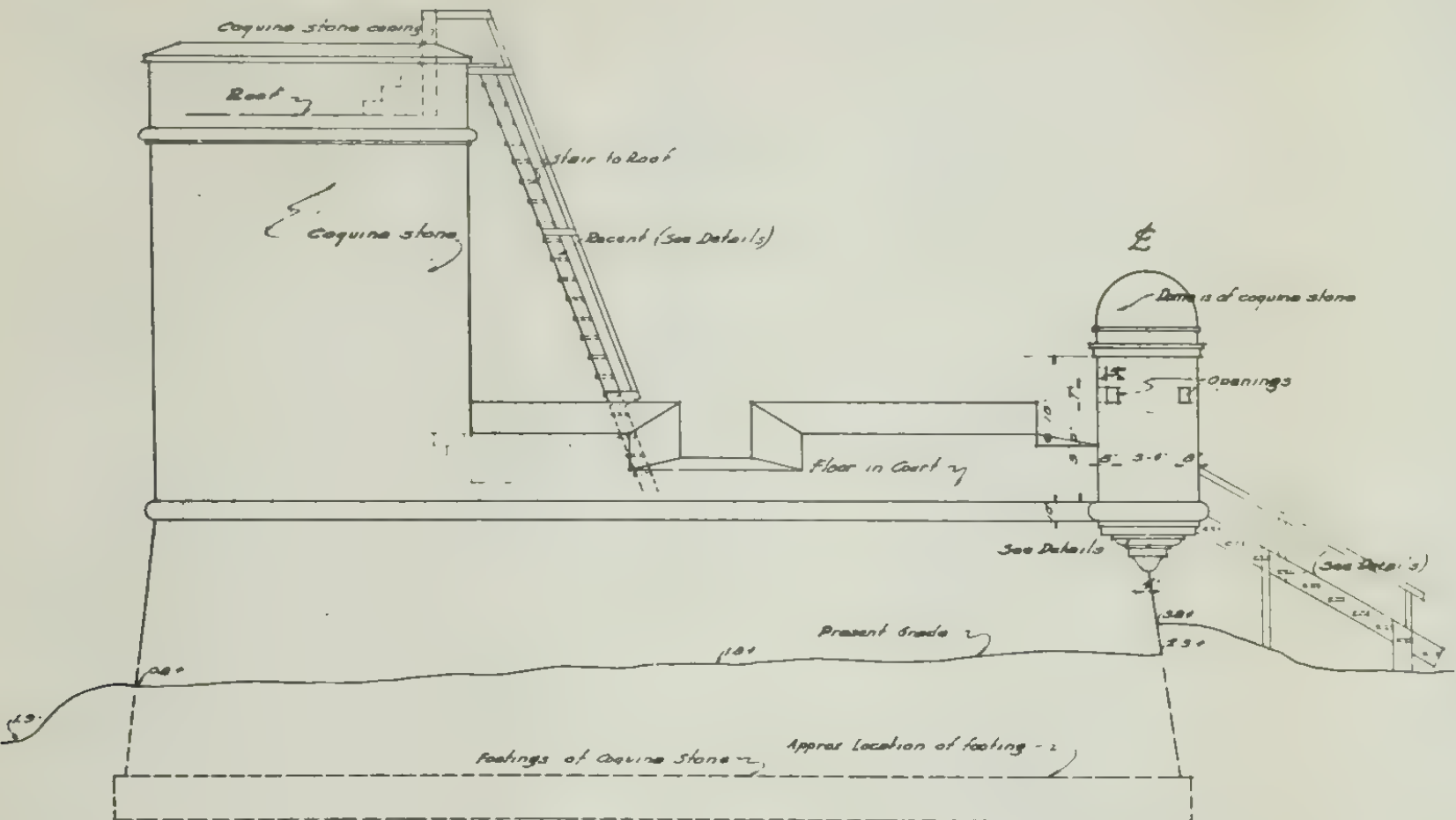
SECTION Y-Y
THRU COURT YARD
Scale 1/4" = 1'-0"

ELEVATIONS & SECTION

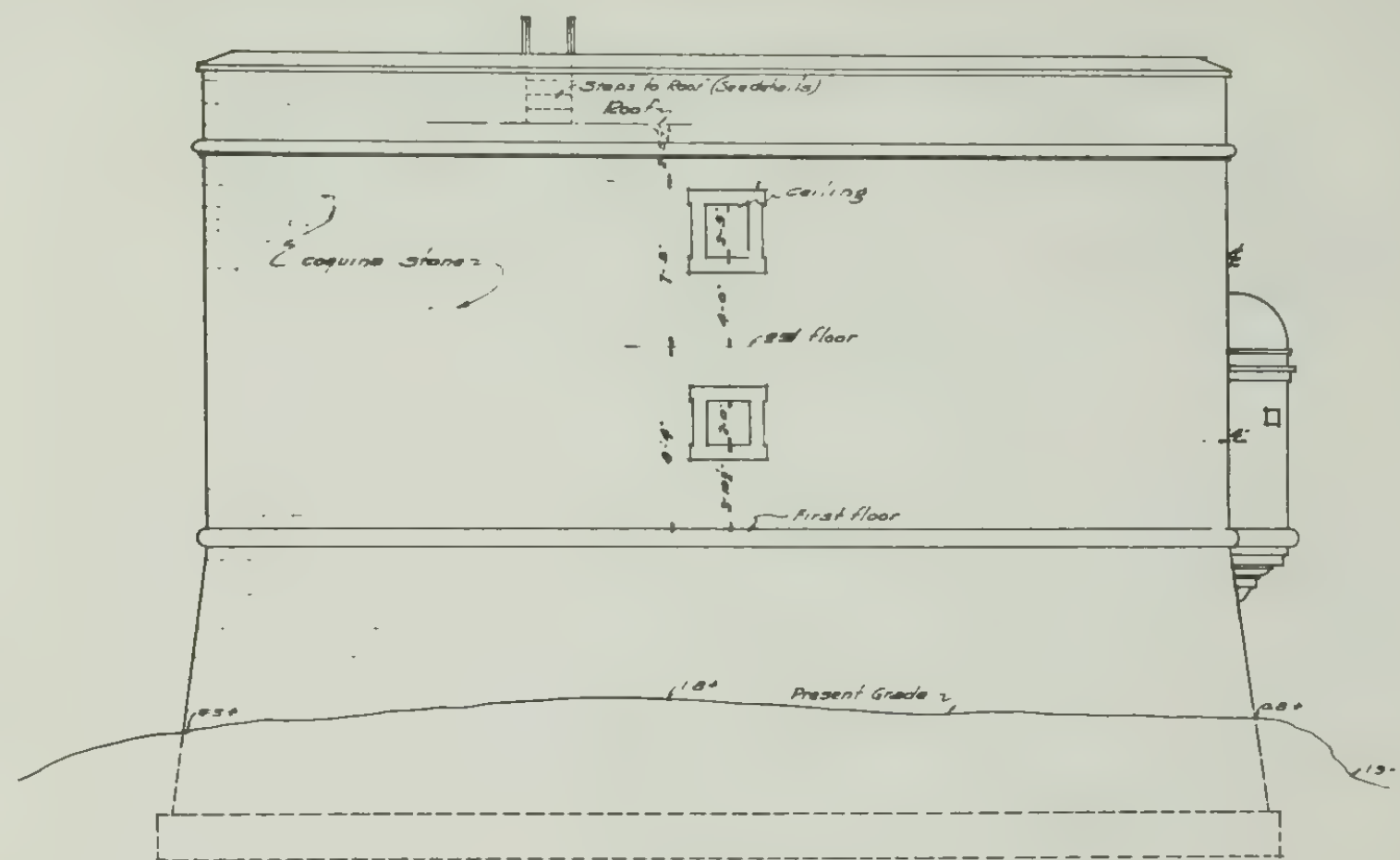
HISTORIC AMERICAN BUILDING SURVEY DRAWING

2 of 5

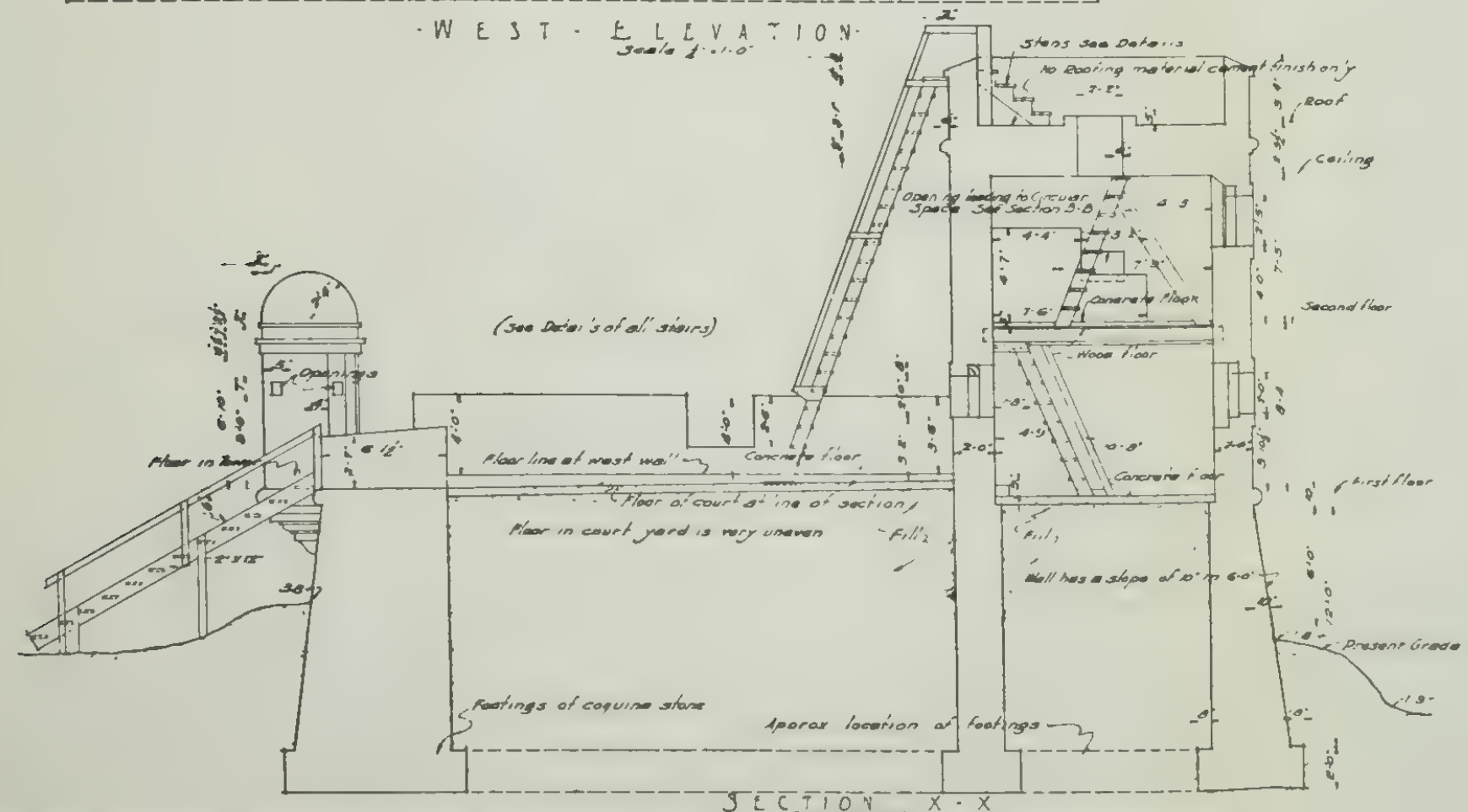
DRAWN BY E.B.H.	MEASURED DRAWINGS	DATE 2-26-38
TRACED BY E.B.H.	OLD FORT MATINEZ ST AUGUSTINE FLA.	WOOD No 101
CHECKED BY H.K.	MR. H. KANLER OFFICE OF NAT. PKS. BUDG. & RES. U.S.A.	SHEET No 2 of 5



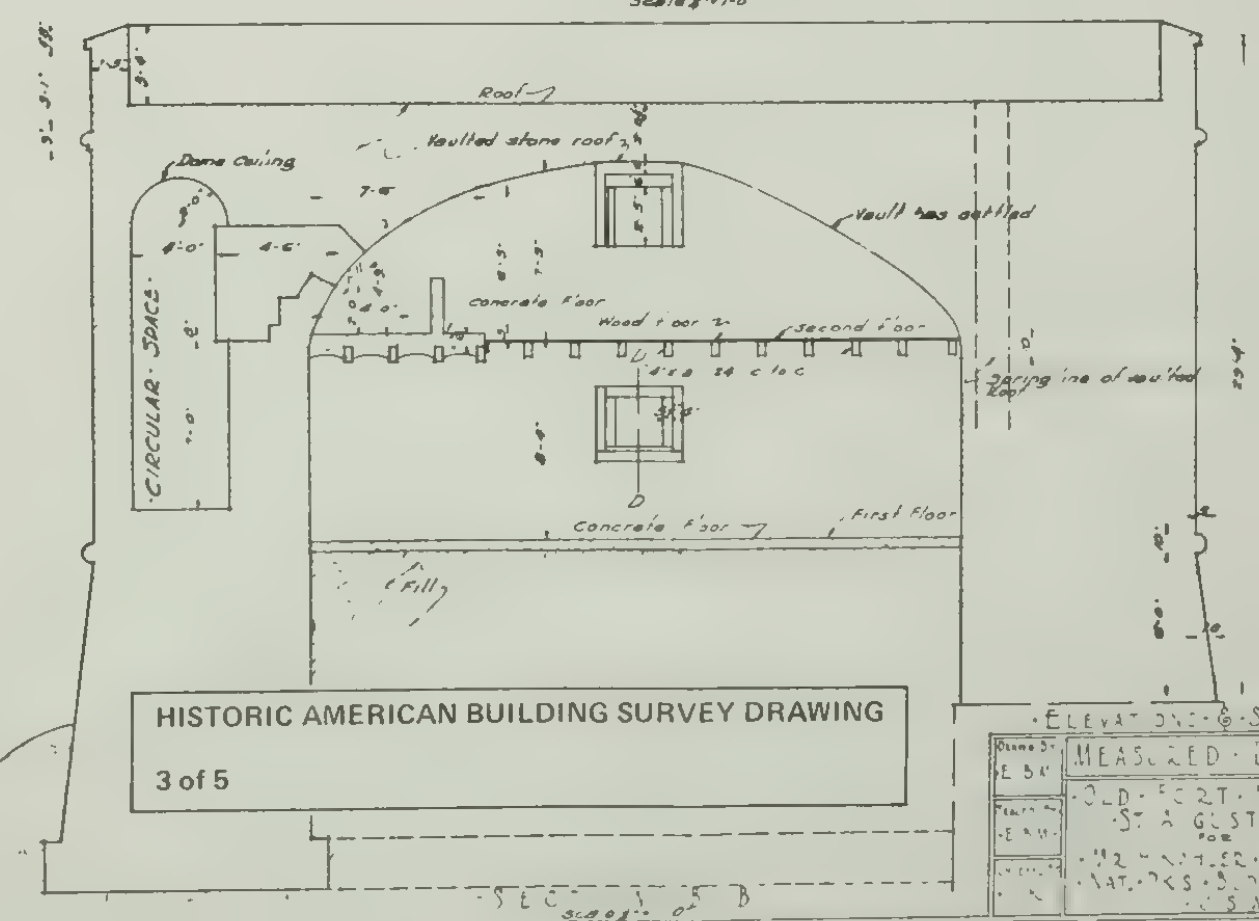
WEST ELEVATION
Scale 1/2" = 1'-0"



NORTH ELEVATION
Scale 1/2" = 1'-0"



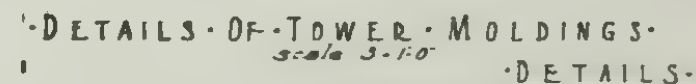
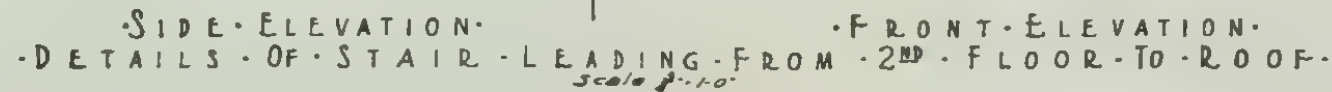
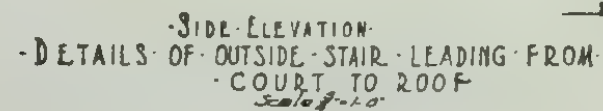
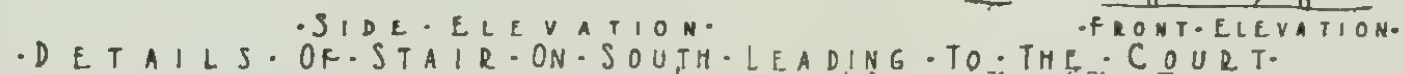
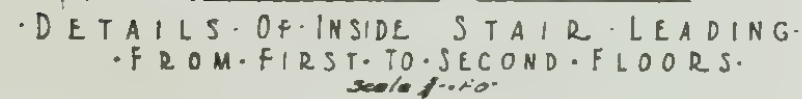
SECTION X-X
Scale 1/2" = 1'-0"



SECTION Y-Y
Scale 1/2" = 1'-0"

HISTORIC AMERICAN BUILDING SURVEY DRAWING
3 of 5

ELEVATIONS & SECTIONS		
Drawn by	MEASURED DRAWINGS	DATE
Checked by	OLD FORT MATANCAS	1934
Reviewed by	ST AUGUSTINE FLA	1934
Project No.	42 MATANCAS OFFICE	1934
Sheet No.	NAT. B. S. B. S. & RES.	1934



NAME - - E.D.M. -	MEASURED - DRAWINGS -	DATE - 2-26-63
RACE - BR - - E.D.M. -	- OLD - FORT - MATANZAS - - ST. AUGUSTINE - FLA. - - FOR -	JOB NO - - 101 -
DUTY - - H.K. -	- MR. H. KAHLER - OFFICE - OF - - NAT. PKS. - BLDGS. - G. - RES. - U.S.A.	SHEET # - 4 -

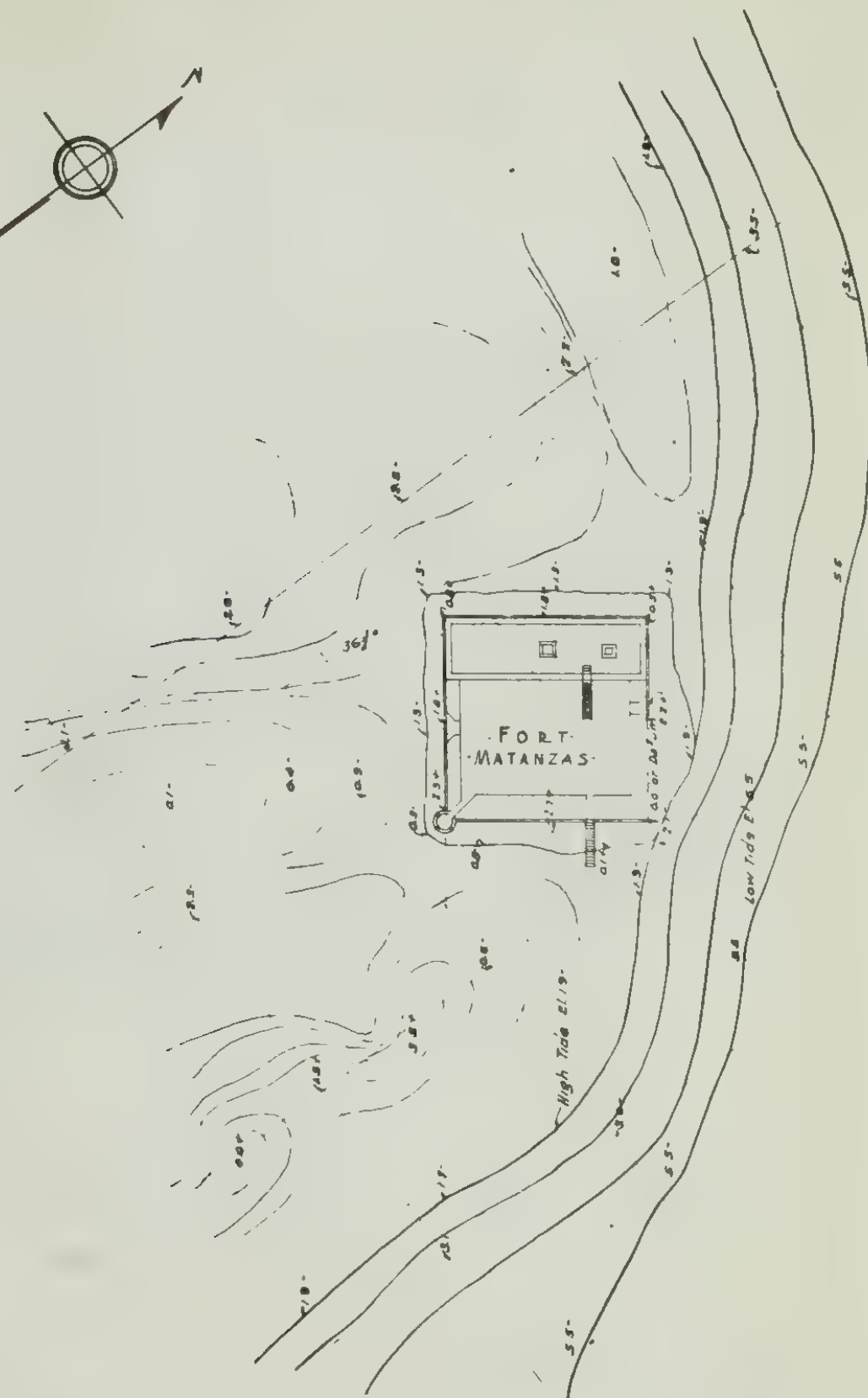
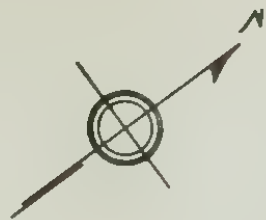


A
S
T
A
N
A

SURVEY DRAWING

• P L A T • P L A N •

DRAWN BY • E. B. M. •	MEASURED • DRAWINGS •	DATE 2-26-34
TRACED BY • E. B. M. •	• OLD • FORT • MATANZAS • • ST. AUGUSTINE • FLA. • For	JOB NO 10
CHECKED BY • H. K. •	• MR. H. KAHLER • OFFICE OF • NAT. PKS. • BLDGS. & RES. • • U. S. A. •	SHEET 5-5



R.

E

V

I

S

.

A

Z

A

N

A

T

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

A

HISTORIC AMERICAN BUILDING SURVEY DRAWING
5 of 5

PLAT PLAN

Drawn by EDM	MEASURED DRAWINGS	DATE 2-26-34
Traced by EDM	OLD FORT MATANZAS ST. AUGUSTINE FLA.	BY 10
Checked by H.K.	MR. H. KAHLER, OFFICE OF NAT. PKS. BLDGS. & RES. U.S.A.	5-8



Illustration D-25

View of Tower Roof, 1934, (Photo M-798)

This photograph, taken about 1934, shows the problems of the tower roof: vegetation growth, cracks and poor water drainage. Notice the height of the chimney flue compared to today's low curb.



Illustration D-26

Detail of Scarp at Southeast Corner, About 1935, (Photo M-814)

Probably taken in 1935, this photograph of the base of the east salient shows the remains of the wooden foundation system uncovered by erosion. The masonry, in good condition, is the product of the 1924 project. We can see that a repeat of the historic shear failure could have occurred if undermining had been unchecked.

1935

Wharves built at Anastasia and Rattlesnake Island. Park officials find that water is eroding foundation of Fort Matanzas on the southeastern corner and east side of fort.



Illustration D-27

View of Matanzas River at Base of East Scarp of Fort, circa. 1935, (Photo M-812)

This picture (as well as D-26 and D-28) was probably taken about the same time as the 1935 erosion report. It illustrates the danger of undermining which has begun due to the wave action of the Matanzas River. At right, remains of the 1924 oyster shell protection which has been completely removed from the base of the southeast scarp.



Illustration D-28

Southeast Salient of Fort Washed by River, October 1936, (Photo M-801)

This photograph was probably taken just prior to the construction of the steel sheet bulkhead which stopped the immediate threat posed by the Matanzas River. Notice the sign on the scarp--this was removed shortly after this picture was taken.

1936

In October through December a steel sheet piling bulkhead was built around Fort Matanzas and two groins built on Anastasia Island. The steel sheet piling was backfilled and large flat stones placed behind the wall. Riprap was placed in front of the piling on the river side.



Illustration D-29

View of Entrance Through West Embrasure, circa. 1936, (Photo M-815)

The entry stair pictured here lasted only a few years before it was replaced by the more massive stair present today. It is, however, probably much more in keeping with a sense of the historic means of egress. This photograph was taken shortly after the completion of the steel bulkhead and installation of coquina pavers. Notice the cannon which was placed in the embrasure at this time.

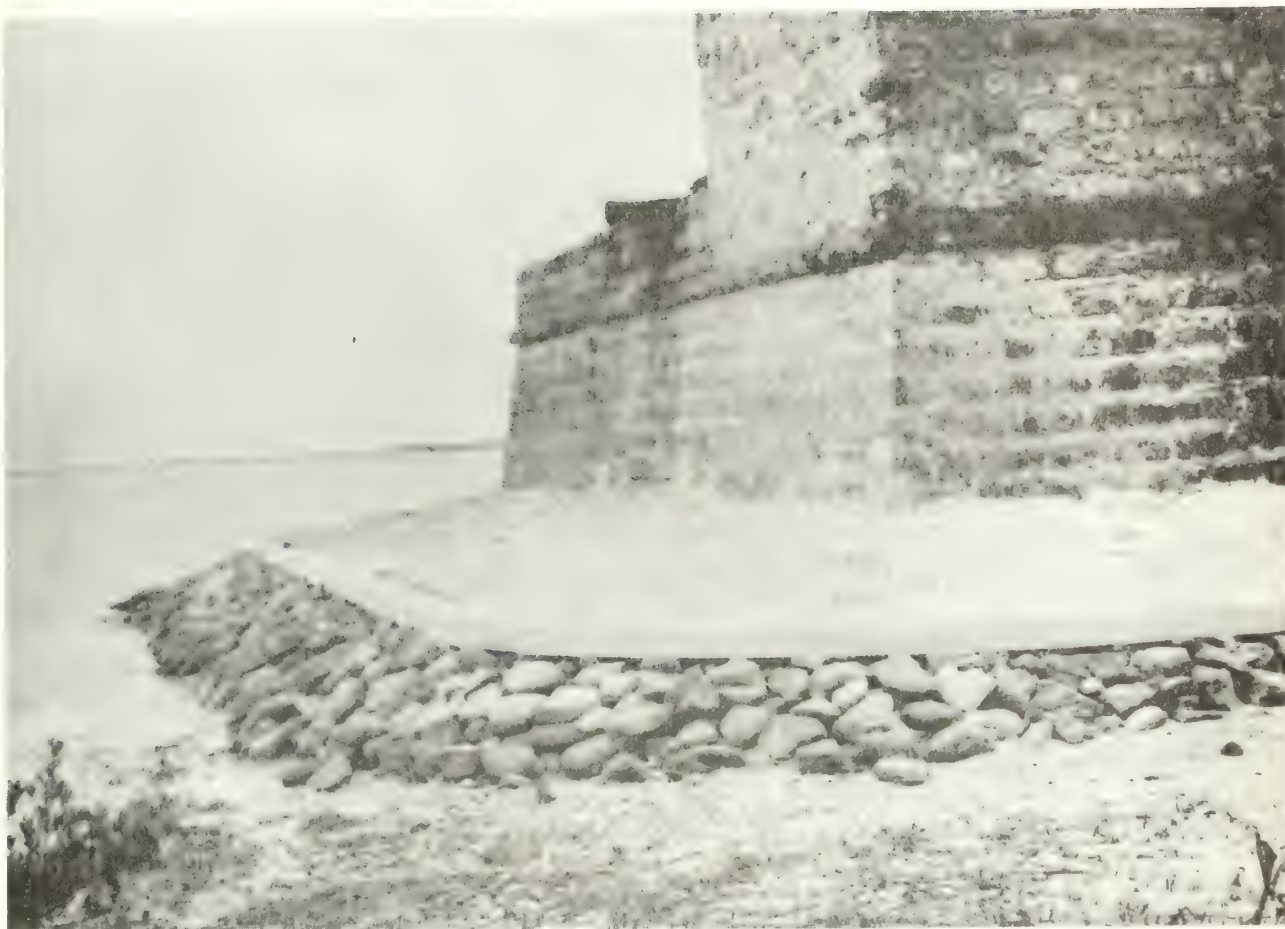


Illustration D-30

View of New Bulkhead with Riprap and Paving Stones, circa 1937,
(Photo M-821)

This site stabilizing system was probably quite effective; however, the paving stones were soon judged to be too visually intrusive and were removed by 1942. The riprap installed in front of the bulkhead is a treatment which would be an effective measure if performed today.

1937

A massive wooden stairway was built for access to the fort and to the second floor. At this time, a flagpole was on the southeast corner of the tower, but was removed around 1940.



Illustration D-31

View of Fort with New Stairs and Flag, circa. 1940, (Photo M-558)

This view of the fort was taken after the installation of the stairs which are still in service today. Notice the American flag which the park maintained for about three years.

1938

Starting in October 1938 and lasting into the spring of 1939, the tower vault reconstruction was undertaken including placement of two more north-south and the lower set of four east-west tie rods. This project apparently included the installation of a wooden floor system in the second level room.



Illustration D-32

View of Vault Stabilization Project, December 1938. (Photo M-40)

The massive bracing system pictured here was necessary as the south face of the tower and north-south tie rods were removed leaving the free-standing north wall.



Illustration D-33

View of Vault Stabilization Project, December 1938, (Photo M-39)

In this view, the vault and south face of the réduit have been dismantled. The stones were marked to permit proper reinstallation. We can see that a section of masonry has been removed from the west face in preparation for an additional set of tie rods at the level of the vault spring.

1940

From April to September, a coquina retaining wall (sea wall) was built along the east and south sides of the fort and backfilled. In addition two groins were built and a third constructed from scrap material. Also, Thor Borresen complained about the false beams used to hide the new tie rods in the fort. These beams were then removed. (Illus. D-35)



Illustration D-34

View of Fort and New Groins, circa. 1942, (Photo M-134)

This photograph shows the new goins and incomplete coquina sea wall. Notice that the paving stones placed behind the steel bulkhead are no longer present--perhaps they were used in the construction of the new shore protection features.



Illustration D-35

Interior View of First Floor, circa. 1940, (Photo M-442)

In this photograph it is interesting that a fire is lit; but more interesting is the use of false beams to hide the four tie rods installed in 1939. These were criticized by Historian Borresen and removed shortly thereafter.

- 1941-46 Stabilization monies not allocated, war years.
- 1944 In October, a storm damaged the second coquina sea wall and the southeast corner of the fort. (Illus. D-36)
- 1945 Storm damage on southeast corner of fort given temporary repairs (backfilling erosion?).
- 1947 More storm damage reported on southeast corner to the stabilization work and erosion of fill around the fort foundation walls.



Illustration D-36

Aerial View of Fort Site After Storm Damage, October 1947, (Photo M-411)

Taken in October 1947, this view shows that the southeast corner of the coquina sea wall and fill behind the wall has been removed by the storms of 1944 and 1947.



Illustration D-37

View of Southeast Corner Erosion, November 1948, (Photo M-139)

The storms of 1944 and 1947 removed a great deal of fill adjacent to the fort and as illustrated here, once again exposed the remains of the wooden foundation at the east salient. Notice that water is trapped between the steel sheet bulkhead and the base of the fort.



Illustration D-38

View of North Scarp Erosion, November 1948, (Photo M-138)

The storms of 1944 and 1947 were severe enough to overcome the shore protective features and begin to erode and undermine the north scarp of the fort as Albert Manucy is pointing out in this photograph.

1948-49 Masonry stabilization work was performed and the building of a new 800 cubic yard groin at the southeast corner of the site was undertaken to repair the storm damage. Parts of the steel sheet bulkhead were cleaned and treated and the void between the steel bulkhead and fort back filled (Illus. D-41).



Illustration D-39

Construction of 800 Cubic Yard Groin, December 15, 1948, (Photo M-144)

Massive riprap was used to repair the southeast corner of the fort site after the storms of 1944 and 1947 removed the coquina sea wall.



Illustration D-40

Treating Steel Bulkhead, December 15, 1948, (Photo M-140)

In this view of the 1948 shore stabilization project, we see workmen performing some kind of treatment to the steel sheet bulkhead, at this point, twelve years old. Such treatments, performed periodically, would extend the life of this protective feature.



Illustration D-41

View of Backfilled Steel Bulkhead, March 23, 1949, (Photo M-157)

After the steel sheet piling was treated (Illus. D-40), backfilling was performed. However, the area between the new 800 cubic yard groin and steel bulkhead was not filled until 1966.



Illustration D-42

View of New 800 Cubic Yard Groin, March 23, 1949, (Photo M-154)

This massive riprap groin created an unsightly condition, but probably performed its protective function for fifteen years.

- 1950 No action documented.
- 1951-52 Unspecified masonry repairs (maintenance) performed.
- 1953-55 Unspecified maintenance continued (repointing?).
- 1956 The wharf was rebuilt at Rattlesnake Island.
- 1957-65 Unspecified maintenance continued (repointing?).
- 1965 Hurricane Dora, 1964, causes damage to shore protection systems at the fort site and knocked out the 1934 dike connecting the north and south sections of Rattlesnake Island.



Illustration D-43

Aerial View of Fort Site After Hurricane Dora, (Photo M-387)

Taken in February 1965, this photograph shows the jumbled riprap of the 1948 groin and the extensive erosion which exposed much of the 1936 steel sheet bulkhead.

1966

A timber sheet piling was installed at the southeast corner of the fort site with additional coquina riprap placed around it. (Illus. D-44 and D-45) The area between the new shore protection system and the fort was filled and sodded with Italian rye grass. (Illus. D-45)



Detail View of Timber Sheet Piling, March 2, 1966, (Photo M-425)

Once installed, riprap was placed in front and on top of the timber sheet piling and the area behind it filled and sodded.



Illustration D-45

View of Backfilling Operation Behind Timber Sheet Piling, March 2, 1966, (Photo M-423)

The area between the steel bulkhead and new timber piling was filled with dredge material as shown here.



Illustration D-46

Aerial View of Fort Site, 1971, (Photo M-535)

In this photograph we see the condition created by the 1966 shore protection project. Even at a fairly high tide condition we see the presence of the small barrier island south of the fort. This sand bar seems to have formed due to the change in tidal prism resulting from Hurricane Dora's removal of the dike connecting the north and south sections of Rattlesnake Island.

- 1967-68 The cannons at the fort were placed on replica 18th century Spanish gun carriages and installed at the fort in May 1968.
- 1968-73 Specified maintenance continued (repointing?).
- 1974 to present Masonry repairs are performed (repointing, dutchman-type stone replacement, etc.) as documented in "daily maintenance log" of Park Mason. (Maintenance Division, Administrative offices, Castillo de San Marcos National Monument.)
- 1976 The Youth Conservation Corps repaired groins on Anastasia Island and placed oyster shells on walkway at the fort.
- 1977 The Corps of Engineer reinstalls a massive dike between the north and south sections of Rattlesnake Island changing the tidal flow in the Intercoastal Waterway and Matanzas River.
- 1978-79 The National Park Service, in March, assembles a team of professionals to research and investigate the historical, archeological and architectural stabilization of the monument and its site. The planning document before you is the product of their effort.
- 1978-79 New ferry boat docks were installed on both Rattlesnake and Anastasia Island, December-January. The old docks were badly deteriorated and removed.



Illustration D-47

Aerial View of Fort Site, April 19, 1979, (Photo M-535)

In this photograph, the new ferry boat docks on both Anastasia and Rattlesnake Islands are visible.

APPENDIX E

EXISTING CONDITIONS-PROBLEMS-TREATMENT ALTERNATIVES

A. Fort Site - Shore Protection

Various shore protection projects have been performed at the Fort Matanzas site. Following, in chronological order, is an examination and assessment of the existing condition of each feature which will aid in understanding the local problems and subsequent alternative treatments. Before each shore protection feature can be evaluated and understood, it is important to describe the general appearance of the shoreline in conjunction with the hydraulic action that affects it. The shoreline at Fort Matanzas may be divided into two areas--the shore south of the fort and the one east of the fort.

South of the Fort - This area has partially stabilized due to the formation of a small barrier island (Illus. E-4). This island probably is a direct product of the breach in Rattlesnake Island in 1964, which decreased the amount of water flow (tidal prism) in the Matanzas River; with the increased tidal prism, due to the dike in 1976-77, erosion has occurred on the east side of the barrier island. It appears that the island is migrating westward because of the shallow water between this and Rattlesnake Island. Erosion may continue due to the increased water flow. The immediate fort site is not threatened in this area at this time, however continued changes in the shore configuration may result in future endangerment.

East of the Fort - This shore south of the dock has shown sand accretion in recent years. This is probably due to two processes. First, as previously noted, many shoals appeared in the Matanzas River and also near the Matanzas Inlet, after the breach in Rattlesnake Island. This along with the breach itself slowed the velocity of the river and decreased erosion along the unprotected east side of Rattlesnake Island. Then, after the closure of the breach, an increased tidal prism produced increased littoral drift from the shoals. Thus, sand deposition has occurred along the east side of the fort, collected by the 1966 construction. This process will not continue however, as the supply for littoral drift is diminishing due to the stabilization of the Matanzas River.

1. Oyster Shell Revetment (1924)

After the "restoration" of Fort Matanzas by the War Department in 1924, it was recommended that a mattress of oyster shells be put down around the base of the building. The thought behind this was that the revetment would prevent the foundation from being undermined as well as washing away of lower stones and grouting. Subsequently, by mid-October 3,825 bushels of oyster shells were

placed around the foundation walls (Illus. D-20 and D-23). Portions of this revetment were later destroyed by either inclement weather or related construction. Additionally, the ground elevation around the fort was raised, completely covering the oyster shells. The oyster shell revetment functioned well during its time (1924-37). Eventually its purpose was superseded by later treatments.

2. Concrete Riprap (1927)

Noting a "dangerous erosion problem," the War Department summoned the Jacksonville District Engineer to visit the Fort Matanzas site. He reported that the erosion was not serious, but recommended a coquina apron around the fort's southeast corner. Because of the "prohibitive expense" of coquina riprap, precast concrete curb stones (4" x 12" x 48") were purchased and subsequently placed. The September 1928 hurricane jumbled the concrete stones and washed out sand from beneath them. No other accounts have been found to indicate what finally happened to these stones. However, a 1933 photograph reveals that the aforementioned southeast corner is absent of any shore protection feature.

3. Steel Bulkhead (1937)

Based upon recommendations by the District Engineer, sheet piling was placed only on the south and east sides of the fort, topped by a concrete cap at elevation 4.5± above MSL. The purpose for this work was to confine the soils around the foundation and to protect the fort walls against river currents during abnormally high tides. (Purposes which have been partially superseded by later treatments.) This has worked to a certain extent, however water still washes over the concrete cap and when it does, it becomes trapped between the fort and the bulkhead after the tide has receded. Despite additional treatments performed in later years the top of the piling above grade is rusted, particularly where exposed (Illus. E-1). H-piles, driven to support the piles, are in worse condition and the top of these members are corroded through in some locations. The concrete cap is in good condition.

Alternative Treatment One - Restoration:

Excavate the ground on each side of the steel bulkhead to the full depth of the sheet piling and remove rust by chemical or mechanical means. Coat the steel with a protective membrane material. This action, if done on a cyclical basis, will preserve the fabric indefinitely. No action other than cosmetic finishing is required on the concrete cap. By restoring the integrity of the

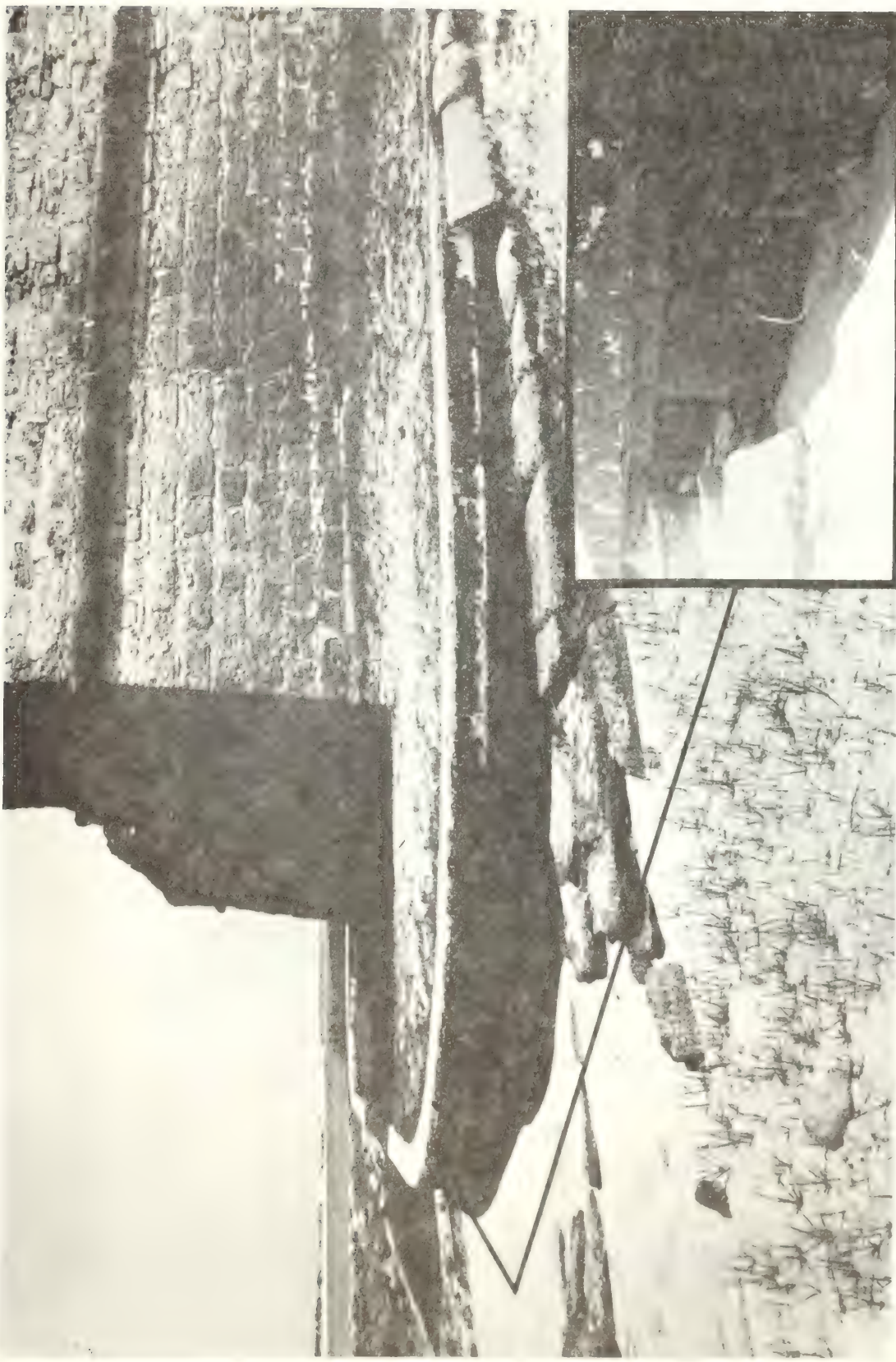


Illustration E-1

Detail of Steel Sheet Bulkhead

Note metal exfoliation in inset photograph.

steel bulkhead, soil around the fort foundation will remain confined. This will prevent scouring of the coquina fabric below grade, as well as minimizing the amount of surface erosion during storm tides.

Alternative Treatment Two - Stabilization:

Excavate the ground on each side of the bulkhead only to the depth of the water table (approximately 5'). Remove rust and coat steel similar to Alternative One. This action is based on the fact that the steel below the water table is constantly submerged and thus only limited corrosion occurs. Coating of the top portion of the bulkhead would prolong its life expectancy, and if done on a cyclical basis would preserve it even longer.

Alternative Treatment Three - Cyclic Maintenance:

No action would be performed on the steel bulkhead; however, periodically fill would be piled against the bulkhead so that it will not be directly exposed to wave action. The concrete cap would be repaired as necessary. Under this alternative the remaining life expectancy of the steel bulkhead is estimated at 30-50 years.

4. Coquina Seawall (1940)

Stabilization of the southeast corner of the Fort Matanzas site became a priority of the park after the National Park Service acquired the monument. One measure, funded by the Emergency Recovery Administration, was the construction of a coquina seawall-- 3' wide at the bottom and 2' wide at the top. From the corner it extended approximately 80' westward and 110' northward. The top of the wall was intended to be at the same elevation as the top of the concrete cap on the steel bulkhead. However, due to a shortage of funds, the top elevation reached only 2.5'± above MSL instead of 4.5'±. The primary function of the seawall (preventing erosion) was accomplished, although at a level 1.5' lower than the specified height. A hurricane in 1944 presumably destroyed the southeast corner of the seawall (Illus. D-36). (There is no documentation available illustrating that the seawall was ever finished at this area.) What remains today are two detached segments, one on the south side of the fort and the other on the east side.

a. South Side

This seawall segment presently is covered by coquina riprap (Illus. E-2). Erosion on this side is minimal due to protection by the small island and the wall appears to be in stable condition.



Illustration E-2

Detail of South Shore Revetment

Timber sheet piling and coquina sea wall covered by coquina riprap.

Treatment - Cyclic Maintenance:

This is the minimum treatment and involves repair (replacement of eroded stones and repointing) of the coquina seawall as necessary. The integrity of the seawall will be preserved, thus insuring some protection for the south side of the site. Since changes are occurring in this area, additional work may be required in the future.

b. East Side

This seawall is exposed and subject to tidal action of the Matanzas River and thus many mortar joints have leached out. Furthermore, the south end of the wall has settled in two areas and displacement has occurred in the wall (Illus. E-3). This could be due to a combination of undermining and lateral earth pressure. There has been an accumulation of sand against the wall in recent years, probably due to the groin placed at the southeast corner in 1966, which has braced the wall. A small portion of the wall extends westward at the north end. This portion illustrates the incompleteness of the project.

Alternative Treatment One - Replacement and Salvage:

Remove the coquina seawall and replace with another shore protection method. Salvaged coquina could be used for other portions of the work, such as armor stones or riprap. It could also be stockpiled for future use as costs are high for quarrying roughly-squared coquina today. Disturbance of the soil along the shoreline will occur.

Alternative Treatment Two - Restoration:

Repair and repoint the coquina seawall. This will involve dismantling the south end of the wall and rebuilding it, in order to provide adequate structural stability. Some eroded stones may require replacement and the part of the wall extending westward will require some rebuilding. Other portions of the wall will require only repointing. The function and stability of the seawall will be restored, however its inadequate height limits visual and aesthetical sense, restoration is desirable, because of impact on the historic scene.

Alternative Treatment Three - Adaptive Reuse:

The coquina seawall will be incorporated into another system to provide partial protection for the fort site. Specifically,



Illustration E-3

Detail of Coquina Seawall East of Fort

this will probably consist of coquina riprap placement in the form of a revetment, similar to the existing treatment at the south side of the site. Repointing of the wall will be required as well as some stone replacement.

5. Rubble-mound Groins (1940)

Another project, performed in conjunction with the coquina seawall, was the construction of two rubble-mound groins on the east side (Illus. D-34) with a third groin begun with leftover stone on the south side. These were constructed of a core of coquina rubble stones topped by larger armor stones of the same material. They provided additional shore protection by retarding erosion and trapping littoral drift. However, the total size of the groins is insufficient during high tides.

a. South Side

This groin has somewhat deteriorated due to a lack of maintenance. At one time it may have functioned well; however, an accumulation of sand east of the groin has resulted in the formation of a barrier island, thus decreasing the need for effectiveness (Illus. E-4).

Alternative Treatment One - Restoration:

Repair, raise and extend groin. This treatment may require complete dismantling of the existing structure in order to provide an adequate base. Although this side of the site is well protected by the barrier island, this action will assure its stability. This is particularly true if the barrier island continues to recede. Also, the groin will act as a collector of littoral drift, resulting in a build-up of sand in the area. This feature will provide additional shore protection for the south side of the site. Flow between the barrier island and Rattlesnake Island will be impeded.

Alternative Treatment Two - Stabilization:

This treatment will only provide for repair of the groin. Basically, this will be an interim solution to the problem of continual change. This feature will provide additional protection (the barrier island is the primary protective source at this time) during normal flood and ebb tides, but lose its effectiveness during storm tides.



Illustration E-4

Area South of Fort--South Groin and Barrier Island

Alternative Treatment Three - Salvage:

Because of the many unknowns in this area due to continual changes, it may be appropriate to wait for this area to stabilize before any action is taken. Therefore, coquina stones from the groin will be removed and used elsewhere. This will also resolve the negative visual impact caused by the deteriorated feature. If the barrier island continues to recede, Rattlesnake Island will again be subjected to direct currents of the Matanzas River. This may require additional shore protection at a future date.

Alternative Treatment Four - No Action:

This alternative is proposed for the same reason as Alternative Three. Under this action, the groin will remain in the same damaged condition and may eventually disappear. Shore protection may be required in the future, based upon a more extensive analysis of the shore.

b. East Side

Both groins are in a deteriorated condition, with the groin nearest to the dock in the worse shape; it has little effectiveness. The groin on the north side of the coquina stone wall is in a better state and is partially responsible for the accretion of sand at the coquina seawall. Nevertheless, the condition of this groin has also declined. The armor stones are now displaced leaving the rubble core stones exposed. The position of these small core stones have been and still are disrupted during storm surges (Illus. E-5).

(Note: Although the following treatment alternatives are applicable to both groins, the groins do not necessarily require identical treatments.)

Alternative Treatment One - Restoration:

Repair, raise and extend groin(s). This alternative will provide protection for the shore by slowing wave currents, thus retarding erosion, during normal flood and ebb tides, as well as some storm tides. Also, collection of littoral drift would increase in some areas. Possibly, total dismantling of the groin(s) may be required. This treatment will provide a solution for protection of the Fort Matanzas site. Some effect will occur relating to the flow of the Matanzas River. However, obstruction of the river flow and littoral drift would be negligible.



Illustration E-5

View of Shore East of Fort

Alternative Treatment Two - Stabilization:

This treatment will provide only for repair of the groin(s). This will provide additional protection during normal flood and ebb tides. However, during high storm tides, the effectiveness of the groins would be reduced because of the flow of current over the groins. Because the groins were underdesigned initially, this alternative will need to be incorporated into another protection feature.

Alternative Treatment Three - Salvage:

The coquina stones from the deteriorated groin(s) will be removed and used elsewhere in the project. Another method of shore protection will be designed to offset the loss of the groin(s).

Alternative Treatment Four - No Action:

Deterioration of the groins will continue under this alternative. Any expected shoreline protection resulting from the groins will eventually become negligible, therefore another method of shore protection will be required. Continued visual impact from the scattered arrangement will occur.

6. Revetment and Groin (1949)

Following the destruction of the southeast corner of the 1940 seawall in 1944, this corner of the site suffered erosion which resulted in minor damage to Fort Matanzas. Finally, in 1949 a coquina stone revetment and groin was constructed to prevent erosion and protect this area. This shore protection structure stabilized the southeast corner, but evidently some problems occurred which were not anticipated for in 1966, another structure was constructed to replace this one. The coquina stone was probably salvaged and used in the new construction.

7. Timber Sheet Piling, Revetment and Riprap (1966)

The final failure of the 1949 shore protection structure at the southeast corner of Fort Matanzas can be attributed to Hurricane Dora which occurred in 1964. In 1966, replacement construction began on a project which consisted of 90' of timber sheeting covered by coquina riprap. Fill was also placed which altered the elevation of the site. Additional work was planned, but never completed due to lack of funds.

a. Timber Sheet Piling

This sheet piling acts as both a bulkhead and a groin. It is covered by coquina riprap, which like the timber sheet piling, is in good condition (Illus. E-6). The land behind the bulkhead portion of this piling has stabilized as a result of this measure. Also, the groin portion of the piling is primarily responsible for the accretion of sand at the coquina seawall. A large hole approximately 13.5' below MSL, has developed north of this groin due to increased turbulence in the area around the impermeable groin. Sand at the seawall may be from this area.

b. Revetment

This protective feature is located on the south side of the fort and consists of coquina stone. A portion of the revetment covers the 1940 coquina seawall, whereas the other part consists of only coquina riprap. Most of the revetment is not subjected to direct tidal currents, because of the barrier island; therefore, it is in good condition.

Alternative Treatment One - Stabilization:

The only required stabilization treatment is to fill the basin, located near the tip of the groin, in the Matanzas River bottom. Approximately 200 cubic yards of material is needed. Continued erosion in this area may eventually undermine the riprap and timber sheet piling. This action will insure stability of the groin.

8. Shore Protection - General Summary of Alternatives

Although many combinations of the previously discussed alternatives are possible, the following alternatives represent the most feasible collective treatments. Additionally, new features may be introduced to complement this combination of treatments with existing structures. For simplicity, the general shore protection alternatives will be divided into two areas. The first covers that area south of the Fort Matanzas site, while the second covers that area east of the fort.

a. South Side

Alternative Treatment One - New Shore Protection/Restoration:

Included under this alternative will be restoration of the groin with additional structures as required. This may include a



Illustration E-6

Southeast Corner of Site

Timber sheet piling covered by coquina riprap forming large groin.

groin(s) and a shore protection feature (revetment) between the existing groin and existing revetment. This treatment will provide complete protection for the south side of the fort site at the present time. However, future changes in this area may eventually require additional protection. Flow between the barrier island and Rattlesnake Island will thus be impeded.

Alternative Treatment Two - Stabilization:

This alternative will include stabilization of the existing groin and artificial nourishment of the shore as necessary. Additional protection to the existing coquina revetment and shore will be provided.

b. East Side

Alternative Treatment One - New Shore Protection/Salvage:

The coquina seawall will be removed and replaced with bulkhead under this alternative. The new bulkhead will be extended to the south side of the dock and covered with coquina riprap, similar to existing work at the southeast corner. This proposed work is a continuation of the 1966 shore protection project. The vertical bulkhead material may be timber, steel or concrete. (Approximately 175 L.F. will be required.) In addition, the two groins will receive a restoration treatment, and the basin near the 1966 groin will be filled. This will provide adequate protection during normal flood and ebb tides and most storm tides.

Alternative Treatment Two - New Protection/Salvage:

This alternative is similar to Alternative One, except this new shore protection will consist of a coquina revetment instead of the vertical bulkhead. Again, this treatment will be sympathetic with the existing structure at the southeast corner. The cost of this structure is less than a bulkhead-type structure. Other impacts will be similar to Alternative One.

Alternative Treatment Three - New Shore Protection/Stabilization:

This alternative consists of stabilization of the existing coquina seawall, covering the seawall with coquina riprap, and construction of a revetment between the seawall and dock. This is similar to the shore protection method which currently exists south of the fort. (Approximately 75 L.F. of riprap and 100 L.F. of revetment will be required.) In addition, the groin near the seawall will be stabilized while the groin near the dock will

be either stabilized or removed. The basin near the 1966 groin will be filled. This treatment is the least expensive. Other impacts similar to Alternative One, except there will be less disturbance near the fort.

Alternative Treatment Four - New Shore Protection Extension:

Using Alternative One, Two or Three, this alternative will extend the shore protection structure north of the dock to include preservation of the archeological midden area. (Approximately 100 L.F. additional shore protection will be required.) Also, groins may be incorporated to provide further protection. Costs for shoreline protection will increase about 60%. Other impacts will be similar to Alternative One, but more extensive.

All relevant cost information pertaining to new shore protection structures is listed in Illustration E-7.

Coquina deterioration is varied depending on location on the fort. The following discussion examines each exterior surface or elevation identifying the various existing conditions and problems.

Type of Structure	Material	Labor (Installation)	Cost Per Foot Riprap (Installation)	Excavation & Fill	Total Per Foot	Mobilization & Equipment	Total Material & Labor Costs	Contractor's Overhead & Profit: (30%)	Grand Total.
Concrete Bulkhead	\$200	\$100	\$60	\$40	\$400	\$20,000	\$90,000 \$130,000	\$27,000 \$39,000	\$117,000 \$169,000
Steel Bulkhead	150	70	60	40	320	20,000	76,000 108,000	22,800 32,400	98,800 140,400
Timber Bulkhead	50	50	60	40	200	20,060	55,000 75,000	16,500 22,500	71,500 97,500
Coquina Revetment	70	80	N.A.	30	160	20,000	48,000 64,000	14,400 19,200	62,400 83,200

Notes:

1. All prices based on August 1979 construction.
2. 175' indicates shore protection south of dock only.
3. 275' includes protection of archeological midden area.

33

Illustration E-7

Cost Summary of Various Types of Shore Protection

B. Structural Shell

The Matanzas Monument has few architectural details and, besides the coquina masonry, its architectural fabrics, furnishings and hardware are no longer existing. In the following narrative, Fort Matanzas will be discussed in terms of its present condition. (Refer to the H.S.R. drawings of existing conditions.)

For convenience, the elevations are identified by cardinal directions of the compass, although the building stands off axis. This means that the actual northwest elevation will be referred to as the "north" elevation, etc. Additionally, the elevations of the réduit or tower section are referred to as "faces" while the elevations of the base below the cordon area are called "scarps" or "scarp walls." Finally, what are referred to as sub-surface walls were historically part of exposed elevations, except for the lowest foot or two. (See Appendix G: Archeological Investigation of the Fort Matanzas Interior--1978.)

1. Elevations

a. North Face

As originally constructed, the north face of the Matanzas tower was a vertical plane on top of a lower battered base, with a total height of ± 33 feet. Two apertures punctured this wall plane, a window at each respective tower floor level with each framed by a projecting trim, 1" x 5", around the opening. Running across this face--as well as the other fort elevations--are two cordons, one corresponding with the top of the terreplein level and one marking the level of the observation deck. These cordon project ± 5 " and are ± 9 " thick. In addition, a ± 2 " projecting lip of the coping stone runs around the top of the tower parapet.

Currently, a cordon stone is missing on the upper cordon course (Illus. 21). A cordon stone of the lower band has been recently replaced. The north face today noticeably reveals the historic structural deterioration that has occurred. The 1916 work failed to remove the vertical splay resulting from foundation settlement with subsequent shear cracking; as repaired, the wall has 12" of outward splay on the east end and 6" on the west (from tower cordon to base cordon). A north-south splay of $7\frac{1}{2}$ " is noticeable in the center of this wall. Although readily noticeable, these splays pose no apparent structural problem.



Illustration E-8

Detail of North Face Windows

Notice incorrect proportions of second floor reconstructed window and tie rod end plate.

The major shear crack which occurred along this wall was along its center through the windows; stabilization work consisted of halting the settlement with tie rods and filling in the crack. During this reconstruction, the second floor window was not rebuilt to its historic width, and much of the projecting trim was not replaced (Illus. E-8). The trim that does exist on both windows is currently eroded and has lost much of its detail. Differences in mortar used reveal the points of fracture, as well as other repair work that has occurred. Recent park maintenance--repointing, stabilizing historic plaster and stone replacement as necessary--is visible but over time should blend in with the adjacent masonry.

Historically, rainwater was drained off the tower terreplein into the cistern; a non-historic scupper was installed in 1939 and currently drains water off the roof onto the north face masonry. This has created two related problems: 1) encouraging vegetative growth and, 2) increasing erosion of the coquina fabric. The scupper is also broken (Illus. 21).

b. West Face and East Face

The west face was built as an unpunctured plane and, with few exceptions, remains as such. This face has an average 6" outward east-west splay. The location of tie rod end plates is most evident on this face; a course midway between the two terreplein levels and the course directly under the tower cordon reveal their replacement due to these rods. This lower course, as a unit, has separated from the plane of the wall and poses a future safety problem (Illus. 24). Exfoliation of the steel channel behind these stones has caused this dislocation. The upper area appears intact and of no immediate concern, although the same forces that caused the lower steel to exfoliate are at work on the upper set, and in time could cause similar problems.

An unexplained void exists above the lower cordon near the east corner of the face. Despite the unknown use of the void, it seems to have been a specific architectural feature as Benham's 1843 report (Illus. 12) makes an obvious mention of this area. Speculation includes the possibility that the void was a joist pocket for some boom structure related to the raising and lowering of the adjacent entry ladder and/or supplies for the fort.

The east face is very similar to the west face in configuration and existing condition. The only notable features on this wall are the two areas of the tie rod ends. They are similar in stability to the upper area on the west face in that they both are apparently intact with the wall plane.

c. South Face

It is the south face of the tower that has undergone the most reconstruction work (Illus. D-32 and D-33). Major rebuilding of this wall has been undertaken twice, the effects of which are visible although the form is basically historically correct (Illus. E-9).

This face historically was punctured with seven apertures on the first floor and four on the second. The first floor area currently differs from the original primarily in the lack of one loophole. This hole was not rebuilt during the 1916 work, possibly due to its nonrecognizability as a definite feature. Although only the west window is original (Illus. E-22), all other openings are approximately correct reconstructions.

As is the case with the north face, major repair work and subsequent maintenance is obvious from differences in mortar texture and color (see HSR drawings, Section IV, F).

Historically, a wooden downspout led from the réduit roof into the cistern as indicated by the ghost below the present scupper which is historically located (Illus. E-9). However, the present scupper drains onto the face coquina. The adverse effects of this water runoff are less noticeable than on the north face, although similarly detrimental to the local fabric.

A hairline crack runs vertically along the eastern end of this wall, although not continuous from cordon to terreplein. A crack at this location is evident in historic photos (Illus. D-4, D-6, and D-7) and was reported in the 1916 work. Although not an apparent structural problem, this crack should be closely observed to note possible movement beyond anticipated thermal variations.

d. West Scarp and East Scarp

These scarp walls, like their tower counterparts, closely resemble their historic appearance except without the plaster coating. Of all exterior elevations, the east scarp wall reveals the highest degree of weathering and stone erosion due to its exposure to the ocean/river weather and to wave action (Illus. 20). Erosion of this area has been a recurring problem and received repair work as early as 1796. Roughly half of the east scarp was rebuilt in 1924 during the second major phase of the War Department preservation work. (Illus. D-13)



Illustration E-9

Réduit South Face



Illustration E-10

Detail of South Face and Stairs

Notice ghost of wooden downspout under historically located concrete scupper. The 1940 stair is too massive, passes in front of loopholes and partially stands on top of the cistern opening. Notice the exposed tie rod end plate (upper right) which rusted and dislodged the facing stone. The dislodged stone was replaced in 1978.

With construction of the steel sheet bulkhead in 1937, water is occasionally trapped between the curtain and the scarp walls. Lack of a sloped grade requires percolation to rid the water--a delayed process which subjects the coquina fabric to undue direct water contact.

A thermal expansion crack runs down the west scarp near the sentry box. This and other hairline cracks do not appear to be structural problems, but should be visually monitored by the park for undue movement.

e. South Scarp

Like the east scarp, much of the south scarp wall is a 1924 reconstruction (Illus. D-14). The use of portland cement in the mortar mix is, of course, non-historic and has aided in the subsequent surface erosion. This is true because the mortar has eroded less than the coquina and created "ledges" for water to collect, causing even further erosion of the coquina.

This face, like the east scarp, shows a high degree of surface erosion due to its historic exposure to direct wave action. But this is no longer a problem. The lower corner of this wall under the sentry box was also rebuilt in this century.

Alternative Treatments - Exterior Coquina Fabric:

The primary cause of erosion to the wall surfaces is surface water, wind, and airborne particles from the seashore setting. The stonework remains structurally stable and in basically good condition. Several alternative treatments exist:

Alternative Treatment One - Restoration:

Including repointing as necessary and replacing a few stones and then applying a plaster coating throughout. If this were accomplished, fabric integrity would be achieved, moisture would be prevented from saturating coquina surfaces, and the historic appearance would be restored aiding interpretation; but the romantic "ruin" appearance would be lost and public resistance could be great.

Alternative Treatment Two - Stabilization:

Including repointing as necessary and replacing a few stones and applying plaster to some limited areas of the lower scarp

walls on east and south fronts. Thus, portions of lower scarp walls would no longer be subjected to direct wave action with subsequent scouring of the coquina.

2. Subsurface Scarp Walls

Historical narratives mention the fort sitting on a bed of oyster shells and marsh mud enclosed in a palmetto sheet piling. The exact design of the foundation is not known; however, archeological investigation at the fort in conjunction with known historical precedent offer two theories. Vertical pine logs approximately 6" in diameter and at a minimum spacing of 18" surrounding the fort were unearthed in the 1978 investigation (Appendix G--Archeological Investigation of the Fort Matanzas Interior-1978). Resting perpendicular to these logs and notched to receive them, run logs of approximately the same size. Whether the horizontal logs continue under the entire base of the building in a checkerboard grid pattern supported on pilings, or whether they extend just under the wall thickness is unknown. Resting along the projected ends of the horizontal foundation joists runs a timber member ± 18 " thick. This member has two sides hewn flat, the lower side notched and double pinned into each horizontal "joist." Common construction technique of the day would have called for a wooden grid under the entire fort, filled with an oyster shell tabby mattress resting on timber piers. (Although not a stabilization concern, further archeology could prove beneficial in this regard.)

Archeology around the fort has revealed parts of this wood foundation along the west scarp as well as the deteriorated foundation condition (Appendix H--Foundation Investigation-1978). It is believed that this timber system has been washed away from the eastern front. (Illus. D-26)

Portions of the 1924 and 1948 repair work on subsurface walls are still in good shape due to the use of Portland cement in the mortar mix (Illus. H-5). However, other locations reveal massive areas of leached-out mortar and several areas of missing stones. (Illus. 22 and H-2 through H-4) Although unexplained, these voids were found along the west scarp and the southwest corner where an 8 cubic foot area of missing stone exists. The missing mortar in time could pose a most serious structural problem if unchecked.

Treatment - Stabilization:

Which will involve excavation, section-by-section, around the base of the building to expose the deteriorated subsurface walls, repointing and replacing missing stones as necessary. Structural integrity of the foundation walls would then be re-established.

3. Entrance Stairs

Entrance to the terreplein of the fort is by means of a wooden stairway along the west scarp constructed by the NPS in 1940. These steps, obviously non-historic, are an intrusion on the historic scene although they do provide easy access to the terreplein. At the top of the stairs is a wooden landing with entrance onto the terreplein through a former embrasure opening; this landing and stair treads become slippery when wet. Several treads are rotted and loose. Original entrance to the watchtower was by means of a wooden ladder which is reported as needing repair frequently. The stairs used between 1937 and 1940 (Illus. D-23) were much less obtrusive in scale and design than those existing.

A more desirable balance between a less intrusive and more historically accurate design and ease and safety of entrance by visitors could be provided. Although these stairs are not a stabilization problem, their temporary removal for the proposed foundation work provides an opportunity for replacing them with an alternative design.

4. Terreplein Area

The gundeck area, or terreplein, of Fort Matanzas includes the architectural features above the base cordon; that is, the outdoor platform area, sentry box, cistern, parapets and stairway going up to the tower second floor. These features are similar in form to their historic appearance, although deteriorated and lacking detail. The stair, a 1940 reconstruction (Illus. E-10) is in good condition, although not historic in form or detail. The sentry box, reconstructed in 1929 is probably similar to its historic predecessor. Much of the south and east parapet walls are 1924 reconstructions and preserve historic form in general. The floor of this area, the terreplein, is very irregular in its slope downward from north to south and is again not historic in material or detail. Overall, these architectural features present an image consistent with the patchwork stabilization and reconstruction performed on this Spanish ruin. Each feature is discussed below in more depth.

a. Terreplein

The existing terreplein is very much "in character" with the fort despite (or because of) its poor condition (Illus. E-11). The surface is irregular, cracked, and has settled unevenly, most noticeably in the southeast corner in the area of the 1924 repair work, the area most susceptible to the fragility of the island site. Currently, the terreplein is in a non-historic state, both in material and grade, and poses potential safety problems as well.

Historical records trace the repair work done on the terreplein through the years. The present terreplein includes two layers of concrete totaling nearly fifteen inches in thickness. These are modern additions on top of coquina paving stones which were placed in 1924. Below these layers are deteriorated sections of tabby which was placed sequentially atop the marsh-mud fill of the base. The last tabby layer was placed in 1806. (see Appendix G-- Archeological Investigation of the Fort Matanzas Interior-1978)

Historically, the terreplein surface had a tabby coating and drained through parapet scupper(s) onto one or more of the scarp walls. Lt. Scriven, in his 1885 measurements, recorded the grade to be roughly twelve inches lower than present and already at that time much above historic level. Archeological investigations suggest that the historic tabby floor may be as much as three feet below present grade.

The primary stabilization problem of the terreplein is its material and construction. The continuous concrete surface has cracked throughout - there being no expansion joints - causing a maintenance problem, a safety problem, and allowing surface water to seep through into the fill below. (Illus. 23) Excessive moisture in the marsh-mud base fill is judged undesirable. The force of 250 cubic yards of fill pushing against the masonry scarps is multiplied if/when that material is saturated.

Alternative Treatment One - Restoration:

In which many layers of non-historic material (concrete) are removed; the surface will then be graded to an historic configuration to assume uniform drainage of rainwater; a water impervious membrane will be installed and then a historic-appearing concrete-tabby deck will slope into a scupper installed in the present void in the south parapet wall. The scupper would extend beyond the scarp wall below the cordon at that point. Thus, rainwater would be controlled so that it does not puddle and seep into the base fill, but would be

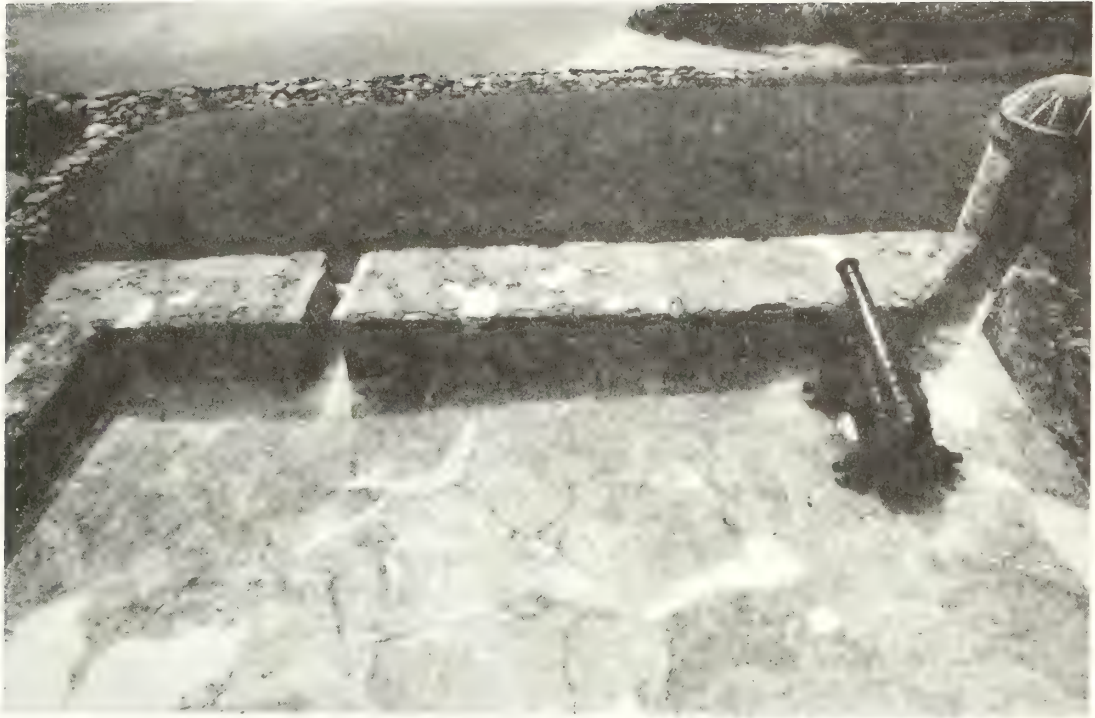


Illustration E-11

View of Terreplein from Tower Deck

removed from the terreplein. Additionally, the historic appearance would aid interpretation and the safety problem of the existing irregular floor surface would be eliminated.

Alternative Treatment Two - Repairs:

In which the cracks in the present concrete surface are cut open and filled with caulk, preventing rainwater from seeping through cracks.

b. Parapet Walls

The perimeter of the gundeck is surmounted on three sides by parapet walls (Illus. E-11). The southwest corner is punctured by a 24-inch wide access to the sentry box interior. This configuration approximately corresponds to the original, although the parapet height, slope and embrasure openings are historically inaccurate. The coquina fabric is deteriorated in places and the historic plaster coating is gone.

The original superior slope of 1/2 on the east and west parapet walls is visible at the tower face where the two intersect and are in a relatively protected area (Illus. E-12). The tops of all parapet walls have received periodic pargeting; currently, this surfacing is cracked and much of the mortar is missing, allowing water penetration into the stone fabric.

(1) West Parapet

Historically, as presently, this wall had a thickness of 3'6"± and was punctured by an embrasure opening serving as both a point of entry and a gun emplacement (Illus. E-13). Although vastly eroded from its original shape due primarily to its use as the entry point, the opening location is original. The top of the wall is approximately level although a worn area exists near the center. Measurements to the terreplein are: 42" on the north, 37" at the embrasure and 44" on the south, while six feet may have been the historic height.

(2) South Parapet

The south parapet is a 1924 reconstruction basically following proper historic form although, perhaps, one course of stone too high. Lower than the east and west parapets, this wall had guns mounted in barbette and thus had no embrasures. However, during the British occupation, earth-filled wooden merlons were added to accommodate a change in ordnance.

The wall measures 6'1"± in thickness, is level from east to west and dimensions to the terreplein are: 36" on the east, 34" in the center and 28" at the west end, reflecting the corresponding slope of the terreplein.

A 17" wide opening was cut through this wall in the late 1920's to facilitate entrance stairs at that point. Today, this opening is non-protected, and is used by visitors as both a point to look over the scarp walls and a jumping off point to the ground below (9'3"); this poses a serious safety concern.

(3) East Parapet

This wall, like the west, maintains its original superior slope at the tower face. Two-thirds of the wall was reconstructed in 1924; in the course of this repair work the southern embrasure was left out and is no longer a feature of the wall. The north embrasure does exist although it is highly weathered and deformed. Currently a cannon is mounted at this position. The current height of the wall above the terreplein (although probably 6 feet historically) is 36" at the tower face, 22" at the embrasure, 36" at the south end, and has a wall thickness of 4'2".

Alternative Treatment One - Restoration:

In which the two existing embrasures will be rebuilt and a third cut into the east parapet; some coping stones will be replaced and others carved to achieve the historic 1/2 superior slope; the void in the south parapet will be filled with masonry to match existing construction; repointing will also be necessary; finally a plaster coating will be applied to the coquina surfaces. Mechanical and water damage would be eliminated and the safety hazard in the south parapet would be eliminated.

Alternative Treatment Two - Stabilization:

In which some stone replacement will be performed in conjunction with repointing and surface treatments; the void in the south parapet should be filled.

c. Sentry Box

The existing sentry box is the third known to have existed (Illus. E-14). Exactly when the original feature fell off is unknown, although it was gone by 1843 as indicated by Benham (Illus. 12). Portions of the original base are still present, but suffering displacement because of rusting iron brackets used in subsequent repairs.



Illustration E-12

View of West Parapet Superior Slope



Illustration E-13
Detail of Entrance Embrasure

The first reconstruction--undertaken by the U.S. War Department in 1925--was grossly inaccurate, a fact which was quickly realized. Constructed of non-historic coquina concrete and brick, this tower had incorrect proportions--was too "fat" and the dome inaccurate (Illus. D-18 through D-20). A more accurate reconstruction was built in 1929 with steel reinforcement used to structurally tie the tower to the scarp walls.

The sentry box is in good condition, but portions of the corbeled base are missing (Illus. E-15), exposing some of the iatrogenic steel reinforcement (Illus. 26). The visible steel is in an advanced exfoliated condition and probably caused the base's displacement. Steel rings were used to support the sentry box at the lower base courses and railroad irons connect it into the parapet walls (see history p.135 for details). The lower ring is visible and reveals steel deterioration (Illus. E-16).

The base of the sentry box dome had a steel lintel ring as well. The visible portion of the steel at the door opening deteriorated and is no longer present, but the steel imbedded in the mortar joint is expanding and slowly causing the dome to separate (Illus. E-17).

Exposure to salt and moisture is causing the steel to deteriorate. The condition of the non-visible steel in the wall fabric is unknown, although even within the stone, they are exposed to the same deteriorating forces due to the stone's porosity.

Alternative Treatment One - Reconstruction:

In which the sentry box and portions of the parapet walls are dismantled and all steel brackets removed; the sentry box will be reconstructed using a structural system which will not cause stone displacement.

Alternative Treatment Two - Stabilization:

Will involve an intensive maintenance/repair effort in which visible iron brackets are cut out of the corbeled masonry base; new reinforcement will be installed and corbeled base stones replaced. Architectural details of the masonry base will thus be restored. Other metal elements above the base and at the dome level will not be treated, but will require observation and maintenance as required at a later date.



Illustration E-14

Detail of Sentry Box Entrance



Illustration E-15

Detail of Sentry Box Base



Illustration E-16

Detail of Steel Deterioration of Sentry Box Cordon

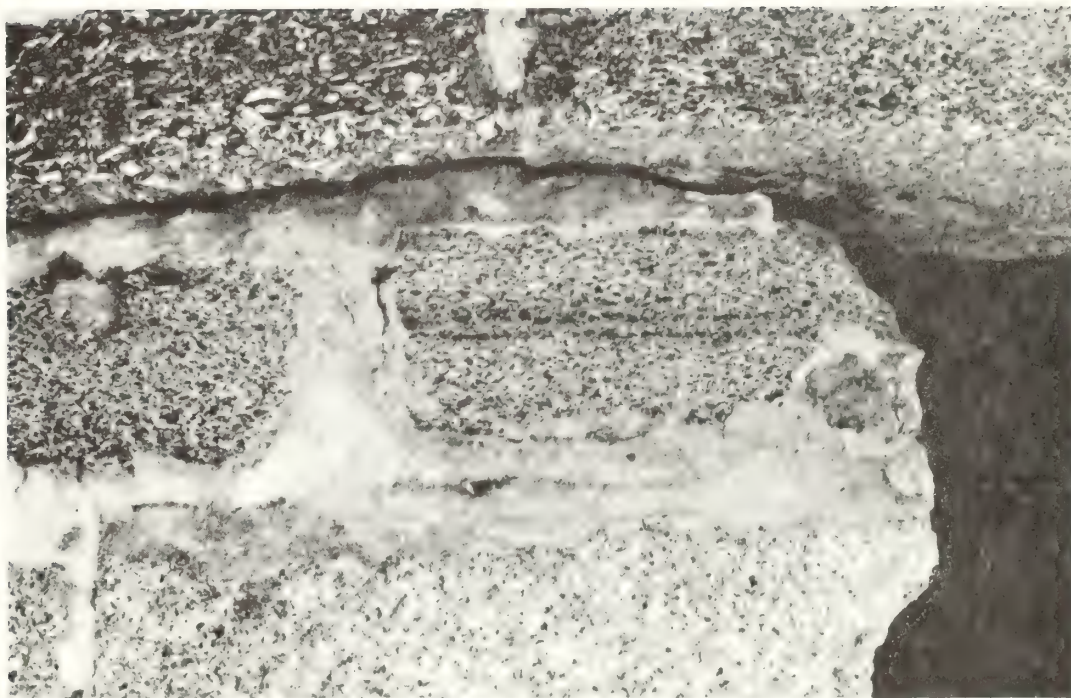


Illustration E-17
Detail of Steel Deterioration at Sentry Box Dome

d. Cistern

Below the terreplein and the south face of the tower is the cistern, the historic source of water storage for the fort (Illus. E-18). A cylindrical shaft 1'10" in diameter punctures the terreplein near the south wall of the tower and leads to the bell-shaped volume, which is roughly 12' deep. Historically, this opening had a low curb around the perimeter and some kind of "pump" for withdrawing water. It was fed through a wood downspout coming from the réduit roof which functioned as a rainwater collector.

The cistern is in remarkably good condition and continues to hold water. It is made of red brick, at least three layers thick with a plaster coating. The plaster coating has several inscriptions, some dating from the 19th century.

The use of brick in this construction is most interesting. Fired brick were not commonly used in the St. Augustine area prior to the English occupation in 1763-83. The fact that this container is constructed within the plane of the tower south face dates it as original. Further investigation into this area is advised.

No treatment is recommended because the cistern is in good condition and needs no repair. It is possible that the historic function of wooden downspout and cistern be restored. In this event, repair of some plaster in the cistern could be performed.

5. Tower First Floor Area

The first floor of the observation tower which housed the garrison troops and kitchen facilities has little resemblance to its historic appearance (Illus. E-19 and E-20). Although it is still about the same size (27' x 10'8") it is undifferentiated and cell-like. If rain has occurred within the previous day or two, the sandy-dirt floor will be moist if not muddy and dripping water will be coming from the decayed wooden ceiling. The visitor will notice broken and badly eroded coquina masonry around windows, the fireplace and door. Wall surfaces are also eroded with patches of plaster here and there; initials and other graffiti are cut into some stones; sloppy repointing and repairs made in the 1930s and 40s will be obvious. Visitors have, on occasion, used this space as a toilet.

Although only vaguely historic in form and generally misleading in terms of architectural fabrics, serious structural failure of the space was arrested by the work undertaken in 1938-39. At that



Illustration E-18

Detail of Cistern Opening



Illustration E-19

First Floor Interior--Looking West

Notice joist pockets in corner.



Illustration E-20

First Floor Interior--Looking East

time, two-thirds of the south wall was removed to facilitate the reconstruction of the second level floor and tower vault and a third set of tie rods, running east-west, was installed.

However, the tower first floor area is not without problems. Protection of existing historic fabric would require actions which spill over into restoration issues. The optimum way to preserve the remaining historic fabric of the room would be to restore its functional integrity; a reconstructed tabby floor properly contoured, plaster-coated walls and rebuilt window and door frames with operable shutters and door. These actions would not only aid the interpretation but would also protect the space from the impact of weather and visitation. These actions would fall short of the full restoration of the space to historic appearance and are more extensive than necessary for immediate stabilization. Each element of the area is examined below and the various conditions, problems and alternative treatments discussed.

a. Doorway

The doorway of the tower first floor area was rebuilt as part of the 1938-39 work. It poorly resembles historic size and appearance. The masonry frame approximates the molded trim pattern of the historic appearance--which is similar to that of the windows--but is much smaller in overall size. Historically measuring about 6' high and 3'8" wide, the present opening is only 5' high--something of a visitor safety hazard--and about 2' wide. (See H.S.R. drawings, Section IV, F.)

Like all the wall apertures, the stone work is worn and edges broken. Only the lintel beam of the wooden door frame is extant although not original. From a level even with the terreplein, the door sill steps down into the first floor room approximately 1'1". Extensive mechanical erosion is present here (Illus. E-20 and E-21) and this sill-step arrangement is not as it was during the historic period. And, of course, with no covering, the doorway allows wind and water infiltration.

Alternative Treatment One - Restoration:

Could be accomplished only if historic first floor grade was restored and the historic grade of the terreplein reestablished. Sill stones would be replaced and steps would be built to take the visitor down into the first floor area. Minor masonry repair, repointing, and crack filling would be necessary. Wooden door frame and door with appropriate hardware would be reconstructed.



Illustration E-21

Detail of First Floor Doorway Steps



Illustration E-22

Detail of Southwest Window--Exterior

Alternative Treatment Two - Stabilization:

This option involves a concentrated maintenance effort in which stone work is repointed and patched and sill steps replaced as necessary.

b. Floor

The present sandy-dirt floor of the tower first floor room gently slopes down from north to south and from east to west. It is generally moist and often wet, even muddy after rainstorms. It is non-historic in material, elevation or contour. Interpretively, it is misleading. Structurally it does not prevent water from seeping into the historic layers below or the marsh-mud fill of the fort's base.

Archeological investigations have been performed in this floor and assist in providing the image of historic appearance and function. (See Appendix G.)

Restoration could be accomplished when some 26 inches of non-historic fill and non-historic floor levels would be removed, down to historic grade. At historic grade a waterproof membrane and tabby floor would be installed. The interpretive effect is obvious as the historic floor location, contour, and appearance would be restored. The preservation achieved would include moisture control and more easily maintainable floor surface which might discourage visitor urinations. This option should not be undertaken, however, until after additional archeological investigations provide more information.

c. Walls

A lime plaster once coated the walls of the tower first floor. Little of this fabric remains and that which does is severely eroded, pitted, cracked, and powdering. The soft coquina masonry of the structural walls is thus exposed to the mechanical impact of climate and visitors. Although two-thirds of the south wall was taken down and rebuilt in both 1916 and 1938-39, it generally maintains its historic location and configuration.

Protruding masonry features near the ceiling above the fireplace are probably reconstructed remains of kitchen apparatus. Little is known about these features. (Illus. 27)

Three joist pockets about two feet above the floor in the west end of the north wall and one near the center of the west wall are the only other discernible wall features. (Illus. E-19) These joist pockets if connected, in plan, create an area about six feet by nine feet and slightly sloping down away from the north wall. It is quite possible that these pockets are the remnants of a wooden bed frame used by the troops. However, because this feature is $4\frac{1}{2}$ feet above the historic floor level, it is reasonable to believe that, if it was a bed, it was a part of later remodeling, probably during the second Spanish period.

d. Windows

All three windows of the first floor space have openings about the same size, 2' square, and are at about the same elevation, 3'8"± above the dirt floor. They do not protect the interior from winds or rain since they have no coverings. Each opening reveals the effects of mechanical impact from weather and heavy visitation. Only the window in the north wall which was rebuilt in 1916 has been fitted with both a sill and lintel timber beam. (Illus. E-23) These are similar to historic dimensions (4" x 6"± section) and protect the vertical integrity of the masonry frame. The two south wall windows have lintel beams only. The western window on the south wall, not part of reconstruction work and more closely historic than any other window in the fort, has sill beam sockets (Illus. E-24), but the eastern window, rebuilt in the 1938-39 work does not (Illus. E-25).

The stabilization of the windows could include treatments which will restore their historic appearance as well as protect existing fabric. This would involve replacing highly eroded stones of the frame, filling cracks and voids and repointing with a soft mortar; installation of the two timber sill beams noted above, installation of timber jambs in all three frames, and construction of wooden shutters with appropriate metal hardware.

If the restoration of the windows was accomplished, the present openings would be protected and the interior protected from the weather. However, the shutters would be a matter for park operations to consider as they should be closed against inclement weather but opened to provide necessary ventilation and light. Some conjecture would be involved in the design of the jambs and shutters as well as shutter hardware--little evidence of these components exists at this site.



Illustration E-23

Detail of First Floor North Window--Interior

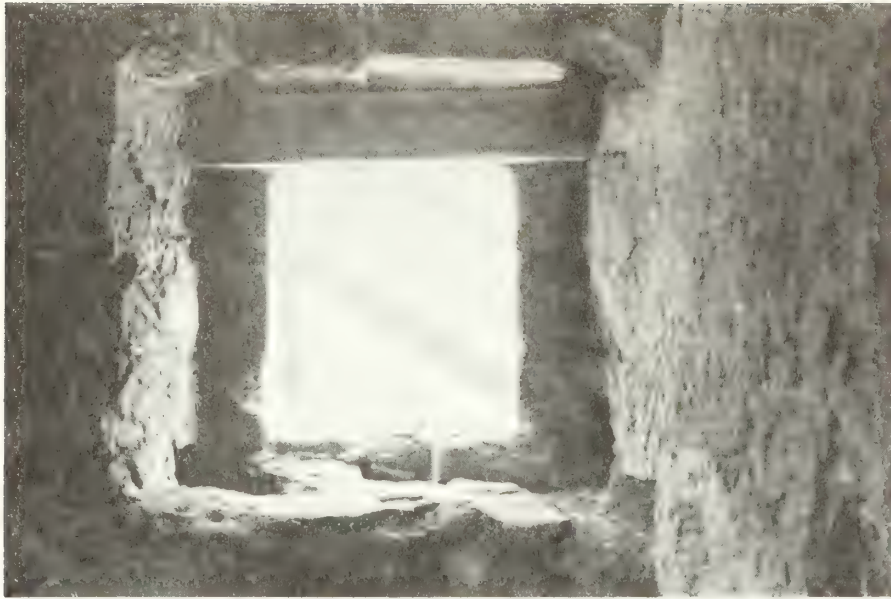


Illustration E-24

Detail of First Floor Southwest Window--Interior



Illustration E-25

Detail of First Floor Southeast Window--Interior

e. Fireplace

A hollow 3'10"± wide, 4'± high and almost 3' deep at the east end of the tower first floor room is the remains of a kitchen hearth which served the garrison at Fort Matanzas. This fireplace was repaired after the cave-in of 1809 and earlier renovations correspond with changes in floor elevations. It was repaired during the 1916 stabilization of the tower and either at that time or during the 1938-39 stabilization the 7-1/4" x 7-1/4" hearth lintel beam was installed. A 15 x 15 inch flue rises from the center back of the fireplace.

The condition of the coquina masonry is good except for the floor and back which has disintegrated and is now covered with a layer of dirt. While the floor and back of the fireplace has eroded away much faster than elsewhere due to the effects of heat on the coquina, this type of erosion is no longer a problem.

The lintel and floor of the fireplace have evolved upward probably one to one and a half feet higher than it was during the historic period.

There being no chimney covering above the flue, rain pours down the coquina walls of the flue and onto the dirt layer in the fireplace where puddling occurs during storms. (For chimney treatment options see Roof Area, Chapter F of this Appendix.)

f. Loopholes

There were four musketry loopholes on the south wall of the tower first floor area according to historic drawings previously discussed (Illus. 12). Today only one of the historic loopholes remain. Two others were fairly accurately reconstructed in 1939 when much of the south wall was removed and reconstructed. The historic loophole, the most westerly of the three has eroded edges and measures 5" x 10"± and 5'3" above the present dirt floor. The two reconstructions have interior openings of comparable size, but become inaccurately narrow (2-3/4" width) as they penetrate the wall and before they splay apart.

Stabilization problems here are the same as for all of the coquina fabric. To preserve the stone from further mechanical erosion, continued maintenance attention is necessary although maintenance of a plaster coating would be more preservative than periodic loss and replacement of historic stone work. Water penetration through these openings is not a critical issue as their size and sloping still repel all but the most severe wind-blown rain.

g. Ceiling/Tie Rods

The ceiling in the tower first floor consists of three segments, the eastern two-thirds of wood (1939), 6' of concrete reconstruction (1916) and the westernmost bay of historic tabby (1740s). Under this ceiling four 1½" diameter tie rods run east-west visually intruding into the space. The ceiling is one-fourteenth historic and even that single bay is badly deteriorated and intruded upon by the 1938-39 tie rods. (Illus. E-26)

Stabilization problems and treatment options for the ceiling and tie rods are discussed in the next chapter of the appendix.

6. Tower Second Floor Area

The second floor of the observation tower housed the officer's quarters and storage space including the powder magazine. Reported "unserviceable" as early as 1821 this handsomely vaulted space fell into a ruinous condition for nearly a century but has been reconstructed twice (1916 and 1938-39) so that today it only resembles its historic form. (Illus. E-27) The vaulted ceiling springs from the ends of the room, is structurally independent of the north and south walls and encloses an area 27' X 10'6". The vault is presently several inches lower than historically, evidenced by the fact that door and window jack arches are partially overlapped (3½" on north).

Historically, upon a tabby floor surface two non-structural walls partitioned the space into three small rooms: on the east the windowless officer's quarters, on the west a protected windowless area in front of the entrance to the powder magazine and in the center, supplies storage and access ladder to the observation tower deck.

Presently, however, the visitor enters the space and is confronted with a wooden floor, the joists being decayed, and an undifferentiated space with eroded walls and a poor replica of a partition in front of the powder magazine entry. Visitors find puddles on both the wooden floor and behind the partition on the reconstructed concrete floor and dripping water coming from the vault if it has rained within the past day or two. A wooden ladder in the center of the room takes them through a 2'2" X 1'9" hatch up to the observation deck. Although coquina surfaces, which were plastered historically, are cracked, voids exist, and erosion is evident, the structural integrity of the space appears sound. Except for the joists of the floor system, until a concerted restoration effort is mandated, few actions need be taken to stabilize this space beyond cyclic maintenance. Each feature is discussed in more detail below.



Illustration E-26

Detail of Vaulted Ceiling--West End



Illustration E-27

Second Floor Interior--Looking West

a. Door

The earliest major shear crack split the center of the réduit through the jack arch of this doorway in the middle of the south wall of the second floor. The reconstruction in 1916 was undertaken again in 1938-39 and is basically accurate although incomplete. Some of the stones are in good condition while the original masonry is pitted and edges are broken. In addition, two voussoir stones are missing leaving unsightly voids. A 6" X 4" timber lintel has been placed but no other door frame elements are present. The opening (Illus. E-28 and E-29), 6'± X 2'8", is at least 6" narrower than reported by Benham in 1843, but generally exhibits the same molded shape as other doors and the windows of the fort. Since the entry is open, there is no barrier to wind or rain.

b. Floor

Two floor surfaces exist in the tower's second level, a large section of timber planks (2 X 10's) at an elevation 2½" higher than the small area at the west end of the room constructed of modern concrete. None of this is historic. The floor is structurally in sound condition except for some decay in floor joists. (Illus. 27) The historic floor surface was a tabby deck resting on small tabby vaults supported upon timber joists. As noted earlier, one of these historic vaults is visible at the west end of the first floor.

As the wood floor has decayed, due to water coming from the leaking vault and room apertures, planks have been replaced by the park as part of cyclic maintenance. However, the joists, which rest in masonry joist pockets, are in some cases very decayed.

Related to the floor system are the four 1½" tie rods passing just below the joists and through the vault abutments. These rods are supposed to stabilize lateral spreading of the vault, a function which was once performed to some extent by the continuous tabby floor membrane. The steel tie rods were placed in 1939 and have been maintained in their visible span by periodic applications of black rustolia. However, decay is visible as the rods penetrate the coquina walls. Further evidence of oxidation with subsequent exfoliation is seen in the fact that the stones used to cap the end plates are pushing out away from the wall, being displaced by the pressure of exfoliation (Illus. 24). There is little tension in the rods and evidence leads to the conclusion that they are not functioning as intended.



Illustration E-28

Second Floor Door--Exterior

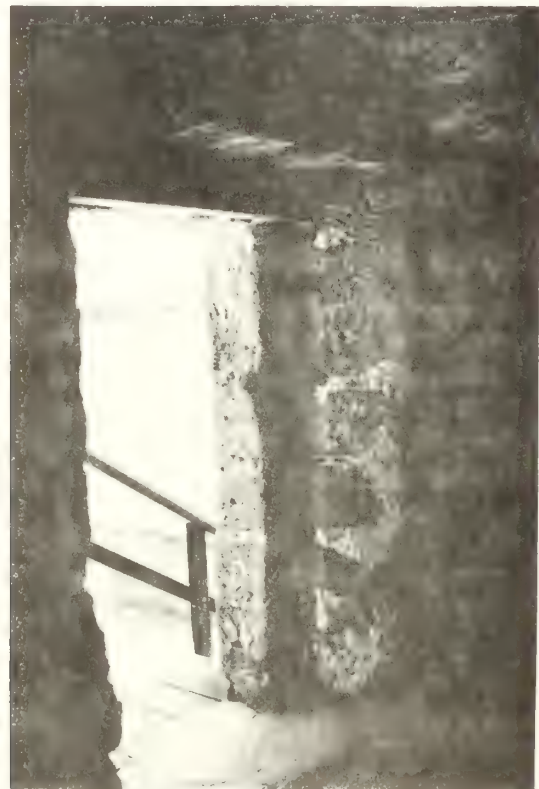


Illustration E-29

Second Floor Door--Interior

Alternative Treatment One - Restoration:

Including the removal of the existing floor system--except for the single historic vault at the west end--and the tie rods. The reconstruction of the floor system as a series of concrete-tabby vaults upon a framework of wooden joist beams which are structurally tied into north and south wall joist pockets and would incorporate additional hidden structural tie-ins with east and west walls (vault abutments). The floor deck would replicate historic appearance. The diaphragm action of this new floor system, structurally tying all walls together, would provide a major stabilizing force to the fort tower.

Alternative Treatment Two - Tie Rod Replacement and Joist Repairs:

Would involve pulling the tie rods, replacing them with a system which will not cause stone displacement, and replacing decayed floor joists as necessary. The damage caused by the rusting tie rods would be stopped. The non-historic wooden portion of the floor would be stabilized.

c. Walls

A lime plaster once coated the walls of the tower second floor. Little of this fabric remains and that which does is eroded and pitted creating a ruinous appearance. Most of the soft coquina masonry of the structural walls is thus directly exposed to the mechanical impact of climate and visitors. The south wall, east of the doorway was reconstructed in 1939. It was not plastered but included rather sloppy cement mortar work which confuses the visual impact.

Two small voids at the lower level of the north wall are possibly remnants of former joist pockets for partitions which historically divided the space. The eastern socket about 8' from the vault spring locates the position of a north-south wall which provided the garrison officer a bed space above the kitchen hearth below (Illus. E-30). The western socket, 9" X 10", is located directly opposite the coquina partition which shields the powder magazine. This pocket locates the possible wooden framework of a earlier door. These features should not be disturbed as future restoration actions will rely upon them for dimensional details.

Another feature is at the east end of the north wall, roughly 4' above the floor; it is the remains of a north-south running steel tie rod used by contractor Bud Deyo in his reconstruction of



Illustration E-30

Detail of Second Floor Interior--North Wall

Hole at lower left is probably a joist pocket locating historic partition creating officer's quarters. Notice irregular and eroded masonry of the upper part of this wall while lower portion still has much plaster present.

the tower vault in 1916. This iron fragment protruding slightly from the wall is causing little damage to the coquina fabric except for the rust stain present.

Alternative Treatment One - Restoration:

In which the historic plaster appearance is reconstructed using soft plaster which is feathered to match existing fabric after repointing as necessary. The 1916 tie rod fragment would have to be removed. Thus, all coquina fabric would be protected from direct mechanical impact from the weather and visitors.

d. Window

There is only one window in the second floor of the Matanzas tower. (Illus. E-31) It is located 4'2" above the wooden floor in the center of the north wall affording a view of the river and marshland "behind" the fort. Historically, the masonry frame and architectural detailing of this aperture was the same as all other windows and doors.

However, the major 19th century shear crack which had split the tower in half destroyed this window and the 1916 reconstruction is inaccurate. Illustration E-8 shows the reconstructed proportions as compared to the first floor window. Presently, the opening measures 2'6" high, within one or two inches of historic height, and 17"± wide, at least 7" narrower than historically.

The reconstructed vault ceiling crosses over the jack arch of the window frame obscuring 3½" of its voussoir stones. A 4" X 6" wooden lintel beam was installed in the 1916 reconstruction or more recently and is in sound condition. The opening has no protective membrane thus affording no protection from inclement weather.

As is the condition of most of the coquina fabric, the masonry window frame is pitted and badly eroded. Architectural details are nearly gone.

Restoration would involve removing some masonry to widen the opening, replacing stones to reestablish architectural details which could accommodate wooden window frame members; installations of wooden frames and shutters with appropriate hardware.



Illustration E-31

Detail of Second Floor North Window--Interior

e. Loopholes

Three loopholes are located along the south wall of the tower second floor at about 4'1"± above the floor. The westernmost is of original construction and exhibits extensive erosion of its masonry frame (Illus. E-32). The other two, reconstructed along with much of the south wall in 1939, are of accurate size (9½" X 4") and proportion. These loopholes open through apertures on the exterior surface which are larger than those of the first floor, a design refinement due to their higher elevation with more strategic advantage. Restoration would involve the application of a plaster coating in and around the loophole areas.

f. Coquina Partition

Historically, a room about 5' wide at the west end on the second floor of the tower was partitioned off by a coquina wall to provide a shield in front of the powder magazine; a safe staging room for the magazine was thus created. It was constructed from floor to vault ceiling (about 5'6" high as evidenced by the "ghost" above the partition on the south wall (Illus. E-32) and probably included a wooden door on the north end as evidenced by a joist pocket previously discussed. Today, a reconstruction of the coquina portion of the partition affords a semblance of this function.

The present wall is not full height (only 4'7") and this height is not continuous, but rather steps down to form an ell shape in elevation where the northern 3'4" section is only 2'4" high. The coquina partition stands on the reconstructed concrete floor of 1916, is 6" to 6½" thick (8" historically, according to Benham) and in good structural condition.

Restoration would involve rebuilding the coquina portion of the wall to full height, i.e., up to the vault and reconstructing a timber door frame and door with appropriate hardware. This action would correct and aid the interpretation of the fort in the magazine area. However, lighting and ventilation would be a problem in the magazine staging room as it includes no apertures and the wooden doorway would involve much conjecture.

g. Powder Magazine

The historic powder magazine which is set into the wall mass of the west end of the tower and having access from the second floor, is a 4' diameter cylindrical shaft. With its dome ceiling the shaft is nearly 14' tall. The scuttle to this space is too small to



Illustration E-32

Detail of Second Floor Interior--South Wall

Visible here is the only non-reconstructed loophole of this level. Notice the ghost on the wall above the reconstructed coquina partition indicating that the original rose full height to the vault.

facilitate easy visitor access being about 2' square and awkwardly located 2' above the floor. This entryway was likely larger (4' high and 2' wide) before the 1802 remodeling was performed in response to water infiltration. There is very little natural light in this area.

Although some of the coquina at the entrance shaft is eroded due to mechanical impact, much historic plaster is present. The condition of the cylinder itself is very good. Some of the most well preserved masonry of the building can be found in the powder magazine. Some mortar and plaster is missing, however.

In 1975, the park installed a wooden platform in the cylinder to catch trash and debris which visitors throw into the "unknown" hollow and as a safety feature. This platform is structurally independent of the magazine.

Restoration would involve enlarging the access passageway to historic dimensions (4' X 2' and 4'6" long) and repointing and plastering the walls. Interpretation and visitor access would be facilitated and the necessary stabilization of historic fabric performed. Allowing better visitor access, however, would introduce the need for better lighting to permit observation of the form and texture of the space.

h. Vault Ceiling

Rainwater leakage through the vaulted ceiling of the tower's second floor area was reported serious as early as 1799. This leakage problem in conjunction with the undermining of the fort's eastern foundations produced, by 1811, failure of the vault to the extent that the Spanish Engineer Cort'azar recommended the abandonment and removal of the second floor area. This shear crack and others which developed during the nineteenth century were not repaired until 1916. The vault spanning some 27' is structurally independent of the north and south walls but springs from the massive east and west walls of the tower. Settlement in either of these walls (east or west) will facilitate the failure of the vault; this is apparently what did occur.

The present vault is the second reconstruction. We surmise that settlement of the east tower wall continued after the 1916 reconstruction--which occurred before the 1937 steel sheet bulkhead--and due to dangerous settlement of the vault had to be rebuilt again in 1938-39. The vault is certainly one of the fort's outstanding architectural features although the 1938-39 reconstruction lacks the craftsmanship and dimensional accuracy of the historic

form. As noted earlier, the present vault is several inches lower than its predecessor (as much as 8" based on an 1885 measurement) and overlaps voussoirs of the window's jack arch. The use of excessive cement mortar creates an unfortunate appearance.

The vault is structurally sound although at both the east and west ends, it does leak. This water infiltration appears to produce more damage to the floor material than to the vault itself, but if unchecked, may eventually leach out the bonding mortar and destabilize the voussoirs. This potential threat is most dangerous to the western 8' of vault which may be original construction employing a less resistant lime mortar than the reconstructed portion using cement. The leakage problem is examined further under this appendix section concerning the roof.

Restoration of the vault would be a major undertaking. To achieve historic height, a reconstruction of the vault is necessary. Adequate restoration appearance could be achieved by applying a plaster coating. If reconstruction is ever deemed desirable, the vault should be structurally tied into north and south walls.

i. Ladder and Scuttle

A unique and challenging feature of Fort Matanzas is the means by which visitors are invited to climb to the observation deck or roof of the tower. A wooden ladder stands in the center of the tower second floor, constructed by the park in 1976 and is probably similar to the historic means of reaching the observation level above.

However, the scuttle itself, 2'2" square, is small enough to afford both the danger of abrasion from its coquina frame and the danger from falls due to awkward climbing. The scuttle is over 28" thick at the center or apex of the vault and 7'7" above the wooden floor.

The ladder is in good condition, built of pine rails and oak rungs, smooth and splinter-free. The scuttle hole shows signs of both mechanical erosion and visitor vandalism in the form of graphitti carved into its stone.

7. Réduit Roof

At some 30' above the existing grade, the deck of the observation tower offers a panoramic view of the surrounding area. It is here that the primary function of the Matanzas Watch Tower becomes obvious to the visitor. From this location, approaching ships were

sighted and signals relayed to the main garrison at Castillo de San Marcos. To the southeast, less than a mile away, is the Matanzas Inlet; to the east the Matanzas River and Anastasia Island; to the north the Matanzas River going 15 miles to St. Augustine; to the west and south is the marsh land of Rattlesnake Island and the swampy forest of the mainland beyond the Intracoastal Waterway. This deck area served as the observational command and, being the tower roof, it also was the source of drinking water collection for use by the garrison. Historically, rainwater was drained to a scupper through the south parapet and then to a wooden downspout in the cistern below the terreplein.

There are several departures from historic appearance and function. The present roof surface, roughly 45' by 12'±, is approximately historic in size, but its surface material is not, nor is its drainage slope, although it does drain. The parapet which surrounds the deck is partially reconstructed and varies in height from a low of 2'9" at the northwest corner to as much as 3'8" at several other locations along north and south walls. It shows various degrees of deterioration and irregularities in form and has little historic plaster remaining. Only low curb walls surround the two openings in the roof--the scuttle and chimney flue. Historically both apertures were protected by "houses."

The tower deck is generally stable with the exception of some fabric, but some actions will be recommended in the area to facilitate stabilization of other locations in the tower.

a. Deck (Réduit Roof)

The terreplein of the tower is both a roof which introduces problems of rainwater control and a floor which introduces issues related to walking surfaces. It has irregular rectangular dimensions as follows:

Along south parapet	45'0"
Along north parapet	44'9"
Along east parapet	12'1"
Along west parapet	11'3"
North-south across center	12'6"

Historically the deck probably measured about 43' by 11'6". The present differences are due to failure of the vault, spreading of the tower and twentieth century repairs and reconstructions.

The present material composition of this floor/roof includes the following series of layers from lowest to upper resting on top of rubble fill above the tower vault: about 12" of tamped coquina

gravel, 1½ to 2" of grey light-weight concrete, water soliable asphalt, soaked layers of burlap (¼ to ½"), and finally a chevron wear surface grey in color. Historically, a smooth-finished tabby deck was extant but this was surely destroyed by vegetation before the twentieth century (Illus. D-3).

Imbedded under the roof layers between 15" and 20" down are east-west and north-south running tie rods which were installed as part of the 1938-39 vault reconstruction/tower stabilization. The five north-south rods are producing similar problems as the four east-west tie rods in the first floor area of the tower. That is, they have oxidized and exfoliated to the degree that the facing stones covering the end plates have periodically been dislodged and fallen off. The purpose of the tie rods is to keep the walls of the tower from further splaying apart, a function which may no longer be provided due to their deteriorated condition.

The reconstructed terreplein was graded to drain rainwater into two scuppers, one each through the north and south parapets. Although the surface is cracked (Illus. E-33) allowing seepage into the vault below and the scuppers are broken (Illus. 21, E-34, and E-35), this drainage system is functional. However, as pointed out earlier, the water is drained so as to spill onto the coquina of the tower faces accelerating their erosion. The scupper through the south parapet is in approximately its historic location and was the only historic scupper. The other one is a twentieth century fabrication probably taking advantage of a shear crack which had split the parapet at that location. Whereas the historic terreplein was sloped down from north to south at a rate of about one to twenty-four, the present surface is designed to drain in both a north and south direction.

Alternative Treatment One - Restoration:

In which the present floor/roof and tie rods are removed and the north scupper filled. A new structural system would be installed which performs the diaphragm function of tying into tower walls and holding them in place. A waterproof system and reconstructed tabby floor would be installed and graded to drain through the south scupper. The south scupper would be repaired and attached to a reconstructed wooden downspout which would carry run-off into the fort cistern in a historic manner. If this action is taken, structural stability would be upgraded and historic appearance and function of the roof/floor would be reconstructed, aiding interpretation.



Illustration F-33

Detail of Réduit Roof

Expansion cracks such as the one shown here allow rainwater seepage into the vault and rooms below.



Illustration E-34

Detail of Scupper--South Face



Illustration E-35

Detail of Scupper--North Parapet

Alternative Treatment Two - Interim Stabilization:

In which the cracks in the deck are repaired by excavating the cracks and filling them with calk. This treatment would reduce rainwater penetration into the vault below.

b. Parapet

At between 20 and 22" thick, parapet walls are continuous around the perimeter of the tower deck (Illus. E-36). They exhibit deformations which reflect the splay (north, 6" and south, 4½") of the tower walls, and irregularities resulting from major shear failures with subsequent tower rebuilding (1916 and 1938-39) and general erosion (Illus. E-37 and E-38). Few patches of plaster remain on these walls and coquina erosion has been more rapid than the erosion of cement mortars used in modern repair efforts.

Except for 13'9" of the west end and 7'6" of the east end, the south parapet is 1939 construction. Historically, the south parapet was about 4' high. Today its height varies between 3'1" at the east end and 3'8" near the west end. The north parapet, which was about 3'6" high, more closely approaches historic height except at the west end where it slowly decreases to only 2'3". Some of this fluctuation in height is a function of the deck grade which has been shaped to drain in a non-historic pattern. Some fluctuation is also due to various amounts of erosion and inconsistencies in modern repair efforts. The north parapet exhibits the scars of three shear failures which are indicated on Benham's drawing of 1843 (Illus. 12). In 1885, Lt. Scriven believed the north parapet contained two musketry embrasures; but he most likely mistook these large broken areas for embrasures. If there were ever musketry embrasures in any of the tower deck parapets they are not adequately documented.

The remains of a 1/3 superior slope reported by Scriven on the parapet top is evident on the west and east and somewhat on the north, but generally the parapet coping is much less sloped due to erosion. In some places this condition contributes to water puddling and seeping into the coquina fabric.

Alternative Treatment One - Restoration:

It will not be possible to completely restore the tower deck parapet walls without rebuilding the tower, which is out of the question at this time. So, accepting the curvatures and splay, some deformation could be corrected. The coping stones would be



Illustration E-36

View of Tower Deck--Looking Northeast



Illustration E-37

View Along South Parapet--Tower Deck



Illustration E-38

View Along North Parapet--Tower Deck

replaced as necessary to restore the 1/3 superior slope and proper height. Repointing and patching of cracks and voids would be followed by a full plaster coating. Thus, protection of the coquina fabric from wind, rain and visitor impact would be achieved.

Alternative Treatment Two - Intensive Maintenance:

In which voids and cracks in the coquina would be filled with soft mortar and repointing performed as necessary. Some coping stones would be carved, leveled to slope so as to assure proper drainage of water off the parapet. Some badly eroded stones would be replaced. Thus, the water penetration and puddling would be alleviated.

c. Scuttle

Egress to and from the observation tower level is provided by a 1976 park ladder through 2' of vault thickness by way of a scuttle measuring 2'1½" by 1'10" (Illus. E-36). A badly deteriorated coquina curb wall surrounds the scuttle to a height of about 8". This area receives much mechanical impact from visitors climbing to and from the observation tower deck and is the site of some vandalism in the form of graffiti. There is no cover over this hole in the roof and, of course, rain falls freely through the scuttle onto the non-historic wooden surface of the tower second floor room.

Historically, some sort of scuttle hatch and/or hatch-house was provided on the roof to protect the scuttle from inclement weather. Some images of this house are provided in early drawings but none are definitive in design.

Restoration would involve the reconstruction of a scuttle hatch-house and replacement of the curb wall stones which are severely eroded. This treatment would provide weather control to the second floor room below and would vastly assist interpretation. At this time such reconstruction would be conjectural as little evidence of the hatch-house design is existing. In the meantime, the replacement of severely eroded curb stones around the scuttle and minor repointing is desirable.

d. Chimney

The chimney flue of the Matanzas tower is in good condition; however, the chimney itself no longer exists on the roof of the tower deck. Measuring 13½" square, the flue opening is presently surrounded by a 10" high coquina curb wall. This curb is in good condition as it was probably constructed in 1939 and is subject to less mechanical impact than that of the scuttle.

Two small iron bars, guard rods, have been installed within the flue to prevent visitors or foreign objects from falling through, but otherwise, the flue is uncovered and rain is allowed to penetrate freely.

Historically, the chimeney rose 6 or 7' above the terreplein and was provided with a top which facilitated proper venting, but kept rain out. This fell into ruin during the nineteenth century and was only about 2' high by the 1930's (Illus. D-25).

Restoration would involve the removal of the guard rods which could eventually be problematic and would no longer be necessary after the reconstruction of the chimney. The reconstruction could be accomplished by using similar structures at Castillo de San Marcos as a model adapted to the dimensions of the present flue.

APPENDIX F

FUTURE RECOMMENDED TREATMENTS
FOR FORT MATANZAS STABILIZATION

Assuming that the first priority treatments are accomplished as recommended under Development/Study Package Proposal 104 (presented in Chapter C of the Architectural Data Section), the following actions could be undertaken as funding becomes available. Cost figures are 1979 estimates.

A. Stabilize steel sheet bulkhead	
1. Excavation, coffering and pumping	\$11,200
2. Cleaning and treating	8,000
3. Backfilling and landscaping	<u>2,000</u>
	21,200
B. Repoint masonry areas of most severe erosion including portions of interior walls, parapets, and scarps; parget parapet copings	
	12,000
C. Repoint all remaining coquina surfaces and stabilize interior plaster	
	18,000
D. Fill basin in river near 1966 groin to prevent undermining of groin	
	10,000
E. Redress revetment and groins	
	3,000
F. Reconstruct chimney using small chimney at Castillo de San Marcos as a model	
	2,500
G. Reconstruct scuttle hatch house--the design would require further research	
	2,000
H. Reconstruct wooden door and window frames, doors and shutters; designs could be based on existing documentation and similar elements existing in the St. Augustine, Florida, area	
	4,000

- I. Install sheet bulkhead on north and west sides of fort to complement and complete 1937 bulkhead

31,000

APPENDIX G

ARCHEOLOGICAL INVESTIGATION OF THE
FORT MATANZAS INTERIOR - 1978

Kathleen Deagan
Florida State University
September 9, 1978

NPS - Southeast Archeological Center Contract # PX589080225
Principal Investigator: Kathleen Deagan
Department of Anthropology
Florida State University

Acknowledgements

The carrying out of this project, and its ultimate success, was considerably facilitated by the help of several individuals. I would particularly like to thank the rangers, boat captains and other personnel at the Fort Matanzas National Monument, and particularly Mr. James Shope, for the day-to-day help and encouragement in the excavation project; and for their aid in solving the logistical problems of island excavation.

Mr. Luis Arana of the Castillo de San Marcos gave freely of his time and expertise during the preparation of the report, and was also very helpful in gathering map sources prior to excavation. The comments and suggestions of Mr. Albert Manucy concerning the fort's construction were also invaluable, and were drawn upon in the preparation of this report.

The prompt response of the Southeast Archeological Center and Mr. George Fischer particularly, to time and logistics problems in the field was greatly appreciated. I would also like to acknowledge the support and skill of the field crew; Ms. Mary Herron, field supervisor, Mr. John Clarke, Mr. Greg Smith and Mr. Jim Quine, who worked with skill and speed under what were frequently very difficult working conditions. Photographs in the report were done by Jim Quine.

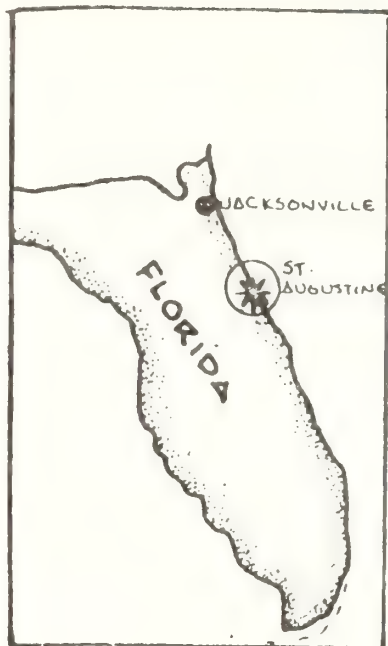
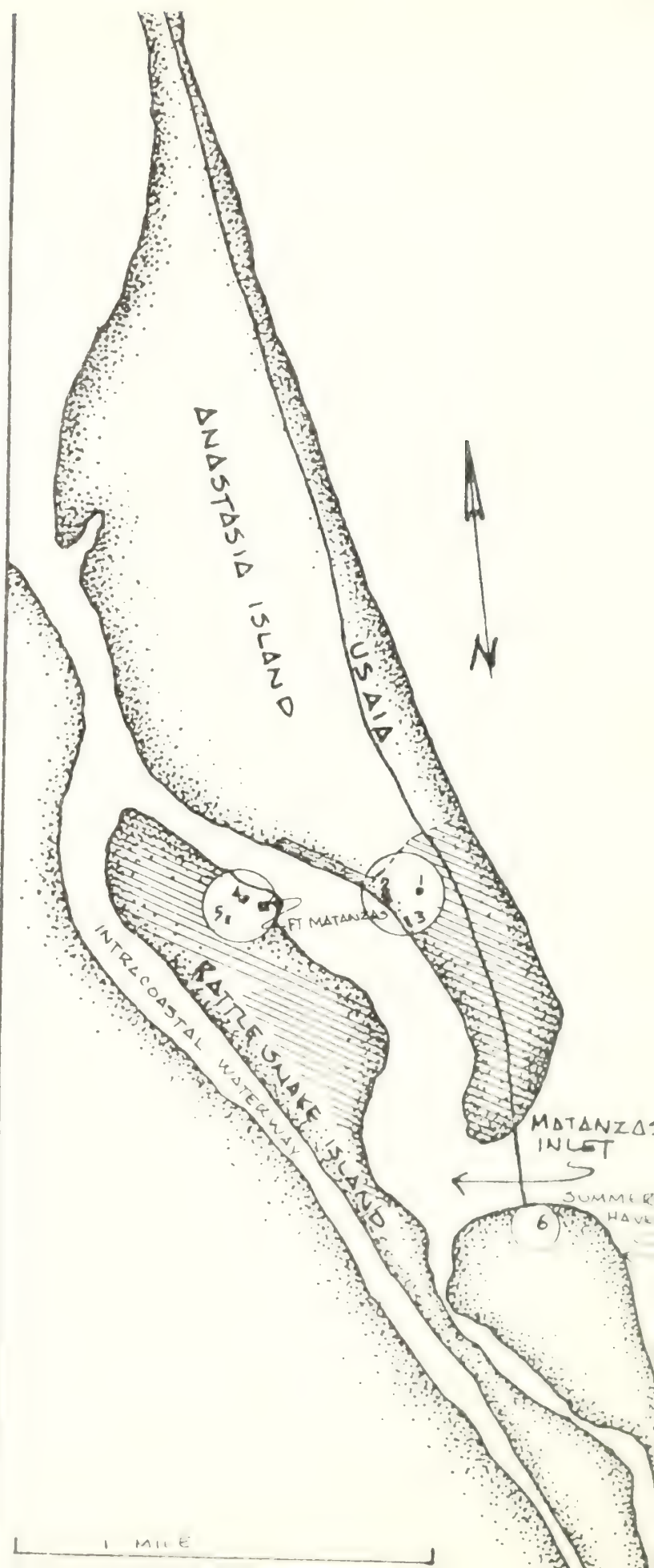


Illustration G-1

MATANZAS VICINITY

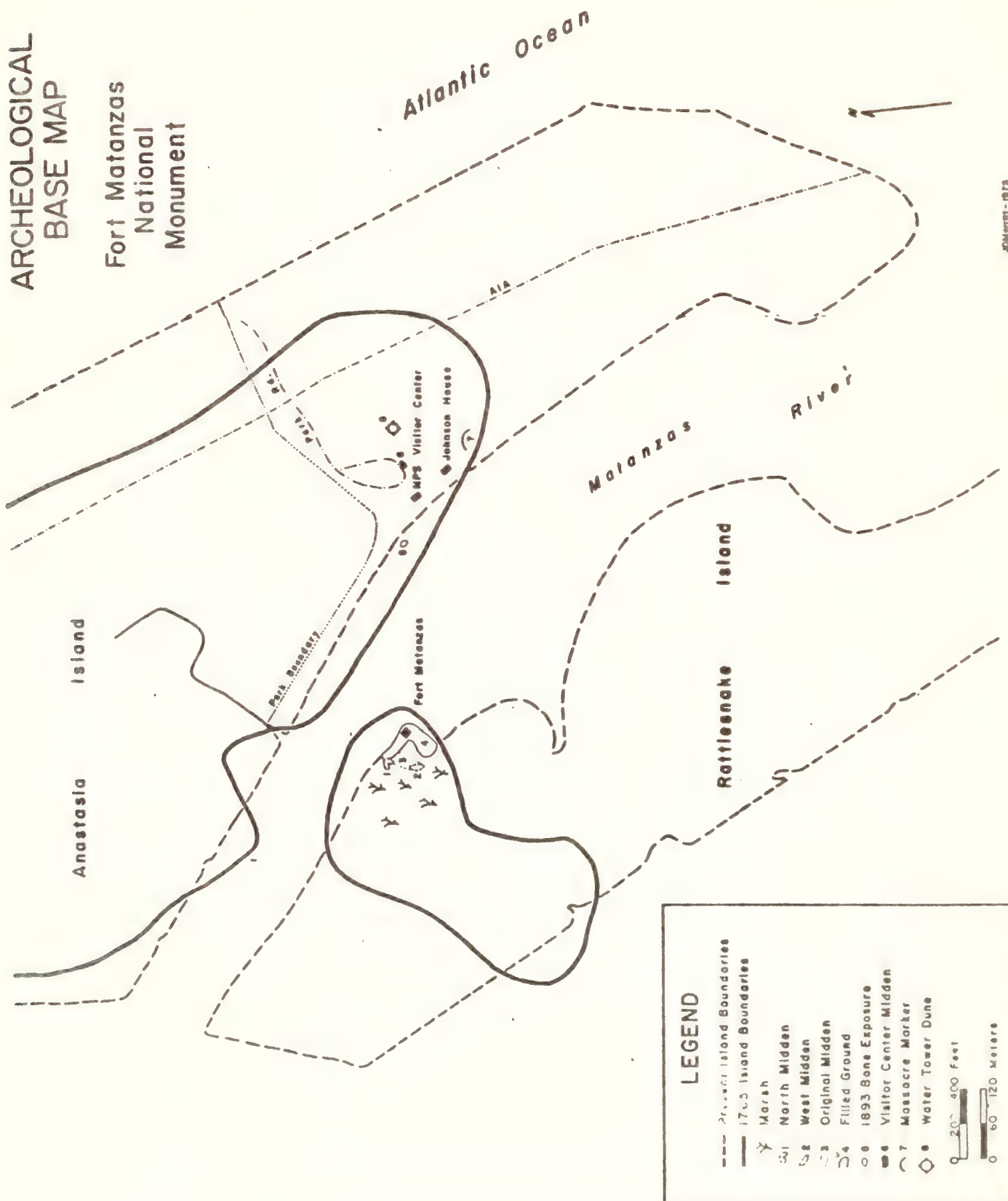
- 1 WATCH TOWER SITE
- 2 VISITOR CENTER SITE SJ-28
- 3 MASSACRE MARKER
- 4 MATANZAS, NORTH MIDDEN
- 5 MATANZAS, WEST MIDDEN
- 6 SUMMER HAVEN MIDDEN

 FT. MATANZAS
NATIONAL MONUMENT



ARCHEOLOGICAL BASE MAP

Fort Matanzas
National
Monument



2000-10-1973

Archeological Investigation of the Fort Matanzas Interior - 1978

Introduction

From the very beginning of recorded North American history, the area of Fort Matanzas National Monument has played an active role in both the early European power struggle for the continent, and in the ensuing history of what is today Florida. Today the monument, located halfway between St. Augustine and Daytona Beach on Florida's east coast, consists of the stone fort on Rattlesnake Island in the Matanzas River, as well as a visitor center and beach area on Anastasia Island on the east side of the river (Illus. G-1). Although the focus of this study was the stone fort itself, the entire monument area is a significant cultural and historical resource (see Deagan 1976: Illus. 9 in Archeological Data Section).

Between August 28, 1978, and September 12, 1978, an archeological investigation of certain architectural features of Fort Matanzas was carried out. The work was directed by Dr. Kathleen Deagan of Florida State University, with a crew of four members. Field supervision was provided by Mary Herron (Florida State University). A total of ten days was spent in the field, amounting to 320 worker-hours spent on the excavation.

The 1978 investigation was strictly oriented toward answering certain specific architectural questions. The questions were prompted by the recent Denver Service Center Southeast Team (National Park Service) stabilization program for the fort (See NPS/DSC Memo: H30-DSC-TSE; 7/12/78).

Fort Matanzas National Monument is located in a highly unstable beach environment, subject to shifting sands, erosion; deposition build-up of sand and silt due to currents, storms, and dredging projects. The effects of this instability have been reflected in the fort itself, which has been subject to erosion, deterioration and several stabilization attempts (see below, Section 4). The investigation of the DSC team into these problems and their subsequent plans for stabilization, resulted in the questions outlined below, and which formed the basis for the archeological research design.

2. Scope of Investigation

Seven specific questions in three problem areas were attacked during the 1978 investigations. The observation tower lower floor

was the first problem area, and was expected to yield information concerning the following:

1. The location of the colonial grade(s) on the interior room, and the nature of flooring or surfacing at that time.
2. The presence and nature of built-in furniture, such as the platform-type furniture present today in the guard-room of the Castillo de San Marcos. Such a platform is indicated in the northwest corner of the room by above-grade marks and holes in the walls (see below, Section 7).
3. The size, shape, position and elevation of the historic hearth and chimney at the east end of the room.

Of interest also in the lower floor area was the recovery of any artifact materials (particularly door or furniture hardware) which could supplement the interpretive program. Moisture content of the various levels of surface and fill in the room was also a concern.

The second area of investigation was on the main terreplein. Here, as in the observation tower lower floor, specific issues to be investigated included:

4. The location of the historic grade, and the nature of historic flooring or surfacing on the terreplein.
5. The nature and compaction of fill below the historic surface, and the moisture content of such fill.

The final area of investigation was the fort foundation itself. Excavations were carried out adjacent to the fort's exterior west scarp to answer the final two questions of the project:

6. The location and presence of a palmetto piling palisade adjacent to the fort exterior. This piling is indicated in early accounts of the fort's construction (see below, Section 4); and was believed to have been part of the original foundation system. It was also predicted that the pilings would be located at an elevation consistent with the base of the fort.
7. The depth and nature of the outer wall foundations. Earlier investigations by the DSC-TSE architects (see SEAC memo: Deagan to Fisher, July 28, 1978) along the

exterior west scarp indicated that the footing extended to a depth greater than 42" below present grade. At that point, ground water was encountered, and the investigation was turned over to the archeologists. (See Appendix H.)

3. Background and Setting of Fort Matanzas

A more complete analysis and assessment of the entire monument area (including Rattlesnake Island) as an archeological, historical, ecological and cultural resource may be found in Deagan 1976 (pp. 6-44). For purposes of this report, only that historical, reconstructive and ecological data relevant to the interpretation of the 1978 investigation will be included here. The reader is referred to the above source for a more complete assessment.

The land and water formations present today at Matanzas inlet and the south end of Anastasia Island are radically different from those of the Spanish colonial period. This has been the result of natural and cultural forces operating in an unstable beach environment. The extent of landform alteration, while not directly relevant to architectural interpretation of the fort itself, is useful as an indication of the erosional and depositional forces endured by the fort through its history. Illustrations G-22, G-23, and G-24 show the extent of this alteration from 1765 to 1969 as outlined by Dunkle (1964), and included in Deagan (1976: pp. 9-11).

A defense structure of some sort has stood at the Matanzas inlet within the monument boundaries for the last 400 years. The Matanzas River provides an alternate route to St. Augustine's harbor and for this reason posed a threat to the defense of the town. It was therefore critically important that the Matanzas inlet be guarded, a situation demonstrated at least four times in the history of St. Augustine.*

Matanzas received its name in 1565, with the slaughter of Jean Ribault's French forces. Ribault had been sent to France to bring reinforcements to the infant colony at Fort Caroline, Florida, under the command of Rene de Laudonniere. In the same month which Ribault arrived, Pedro Menendez de Aviles was sent to Florida by the crown of Spain to answer the French challenge to Spain's sovereignty in the new world. Barely a week after Menendez' arrival and initial settlement at St. Augustine, Ribault decided to sail to St. Augustine,

*Data for the historical background is primarily from Arana (1974) and Manucy (1970).

and attack Menendez. En route, a severe storm shipwrecked the French fleet about 22 kilometers to the south of St. Augustine, and the 476 survivors marched up the coast in two groups. Both groups were stopped by the waters of the Matanzas inlet, across which Pedro Menendez and his men were waiting. Both groups, with the exception of 200 men who marched back southward, surrendered to Menendez and were ferried 10 at a time across the inlet. There they were placed at the point of a crossbow shot's distance toward St. Augustine and all but 31 were put to the knife. The remaining 200 men were eventually hunted down by Menendez, and the area of the monument to this day bears the name "Matanzas", which in English means "slaughters."

In 1569, a watchtower and sentry house were built at Matanzas as part of the coastal defense system of Spanish Florida. These typically housed 6 soldiers, and one or another of these wooden watchtowers was present until 1742 when the extant stone fort was built on Rattlesnake Island. The sentries at Matanzas sent messages of approaching ships to St. Augustine, particularly of pirate corsairs. In 1683 and 1686 pirates attempted to capture St. Augustine via Matanzas, and were narrowly defeated by ambush in the former instance. Seven soldiers were usually in residence at Matanzas, and no attacks were made upon the fort.

Spain regained Florida in 1784 by treaty, and once again occupied Matanzas. By 1805, however, Spain could no longer afford to maintain the fort, and it was abandoned to fall into disrepair. In 1821, Matanzas was ceded to the United States along with the rest of Florida, and was transferred to the Department of the Interior in 1933. Between 1805 and 1916 the fort itself was abandoned and gradually fell to ruin.

There is no historical indication that Rattlesnake Island contained any historic structures before 1740, when construction of the stone fort began. An account of the 1702 seige of St. Augustine discusses removing all craft from the Matanzas River, and described a raft located across the river from the Matanzas tower, on the west bank of the river (Arana n.d.). Obviously, the watchtower was on the Anastasia portion of the inlet at this date. This location of the watchtower is further evidenced by maps made in 1703, 1740, and 1724; all of which show a tower or structure on Anastasia Island (various maps in Dunkle 1964).

Two maps made by the British at the time of Oglethorpe's 1740 seige show structures on both Anastasia and Rattlesnake Islands (Todiman 1740; Anon 1740), although the Rattlesnake Island structure is labelled "barracks." Since the fort construction

was presumed not to have begun until after the threat demonstrated by the seige, it is possible that the "barracks" structure housed convicts who were known to have been working at the coquina quarries of El Penon, near present-day Summerhaven. On both maps the "barracks" are directly across the river from the Anastasia Island watchtower, probably on or near the site of the extant fort.

After 1765, alterations of terrain due to natural forces, as well as human construction and activity in the monument area made changes which are critical to archeological concerns in the area.

4. Construction History of Fort Matanzas

This section will present that construction and reconstruction data relevant to archeological concerns. For more detailed study and discussion of this topic, the reader is referred to the Historical Data Section. The information contained here is taken primarily from those sources.

The original construction of Fort Matanzas took place between 1740 and 1742, undoubtedly taking advantage of the nearby marine resources, including coquina rock (a quarry was at nearby El Penon), and oyster shells. Archeological information has also indicated that marsh mud and clay, and pine logs (both readily available at Matanzas) were also used in construction. A contemporary comment on the fort's construction noted that log pilings were used (Luis Arana, personal communication, Fort Matanzas 1978). No documented work was carried out at Fort Matanzas during the British occupation which would affect the archeological record, although the fort was occupied by 6 to 9 soldiers during this time.

At the beginning of the second Spanish period, Fort Matanzas was reported by Engineer de la Roque to be in very good condition. During the second Spanish period, however, numerous repairs extending below grade at the fort (and thereby altering the archeological record) took place. In 1793, a new surface was laid on the terreplein to support the 8-pounder cannons that were to be placed there that year. As Arana (1978) points out, the major period of decline and repair was after 1796. Foundation erosion was a major problem in that year, and repairs were undertaken by master mason Clemente de Salas. Unfortunately, no description or report of this work has been found, although archeological data suggests that it encompassed the west foundation, as well as the more exposed east and south foundations.

Dampness and rain were major contributing factors to decay, and in 1799, repairs to the roof, floors, chimney, walls and foundations were carried out because of this.

In 1806, the terreplein was once again replaced, this time of lime tabby, 16 Spanish inches (U.S. 14.624 inches) thick. This was probably the surface badly cracked and broken by trees and terreplein slump in the nineteenth century.

The second story floor caved in near the chimney in 1809, prompting repairs to that area, and walls were whitewashed in an attempt to deal with what was apparently a very bad roach problem. By 1818, the observation tower upper floor was badly cracked, and stones were washed away from the east and south foundations. By 1821, the end of the second Spanish period, Fort Matanzas was in ruins, and deemed uninhabitable.

Through the nineteenth century, the fort, then under the jurisdiction of the war department, saw little activity. It was inspected and measured in 1885 by Lt. Scriven, who described the decayed conditions of Fort Matanzas, and also provided a set of useful and detailed measurements of the fort at that time.

During the twentieth century, numerous repairs and restoration attempts were carried out at the fort. For purposes of archeological interpretation, those done in 1916 and 1924 are the most significant.

The 1916 repairs involved the repair of the observation tower. Illustrations D-4 and D-5 show two large cracks extending from top to bottom of the tower on both the north and south faces. The 1916 work (carried out by Bud Deyo of St. Augustine) repaired these cracks (which archeological investigation revealed to extend well below the grade level), although detailed record of the extent and nature of the work is not available.

It was not until 1924 that the massive cracks and slumps in the terreplein were repaired, again by Bud Deyo. More information is available concerning this project, which consisted of three areas within the fort. The first was the reconstruction of the south terreplein wall, which was accomplished by removing all of the stones, marking them and replacing them. It is believed that similar, although not as extensive, repairs were made on the east terreplein wall. A photograph showing the removal of the south wall reveals a wall of what appears to be earth directly behind the stones, and beneath the terreplein (Illus. D-13).

The second phase of the repair work was the rebuilding of the terreplein surface. Details of this work are not available, but undoubtedly repaired and replaced the 1806 tabby surface which must have been destroyed by the extensive tree growth through it.

The third portion of the work involved the upper floor of the observation tower. That floor was covered with wood planking, leaving the west end open for visitors to observe reconstruction of the previous tabby slab and beam construction.

In 1937-38, the National Park Service undertook the repair and relaying of the tower arch in the west end of the observation tower. Although this work may not have directly altered the existing archeological deposits, it may have added deposits which would be discernable through excavation.

Exterior repairs on the fort, primarily to protect the foundations from river erosion and shifting sands, took place during the twentieth century in 1924, 1935, and again at an unspecified later date. The 1924 work involved the placement of huge amounts of oyster shell against the fort walls, while the 1935 NPS work constructed a steel bulkhead filled with earth and stones between the bulkhead and the fort wall. A seawall was also constructed at this time on the east side of the fort. This 1935 stabilization work was washed away by a storm in 1947, and after this date the concrete apron and stabilization system seen today was established. These events are significant to the interpretation of the archeological data at the fort, and have been included here as an aid to the reader in assessing the interpretations included in the following sections.

5. Excavation Methodology and Controls

Locational Controls

Five excavation units were excavated during the course of the project; shown in Illustration G-3. The horizontal locations of these tests were determined by, and tied into the existing walls of the fort itself. The "grid", therefore, consists of a series lettered test units. Table 1 lists that information necessary for the relocation of these units.

Vertical control was maintained by a datum plane, established in relation to the stone cordon on the fort's exterior, and also to mean sea level. All elevations were measured down from this datum plan in meters.

The datum plane in the observation tower lower floor was located at 1.48 meters above the top of the stone cordon. The point on the cordon from which the measurement was made was directly below the center of the window in the north wall of the room.

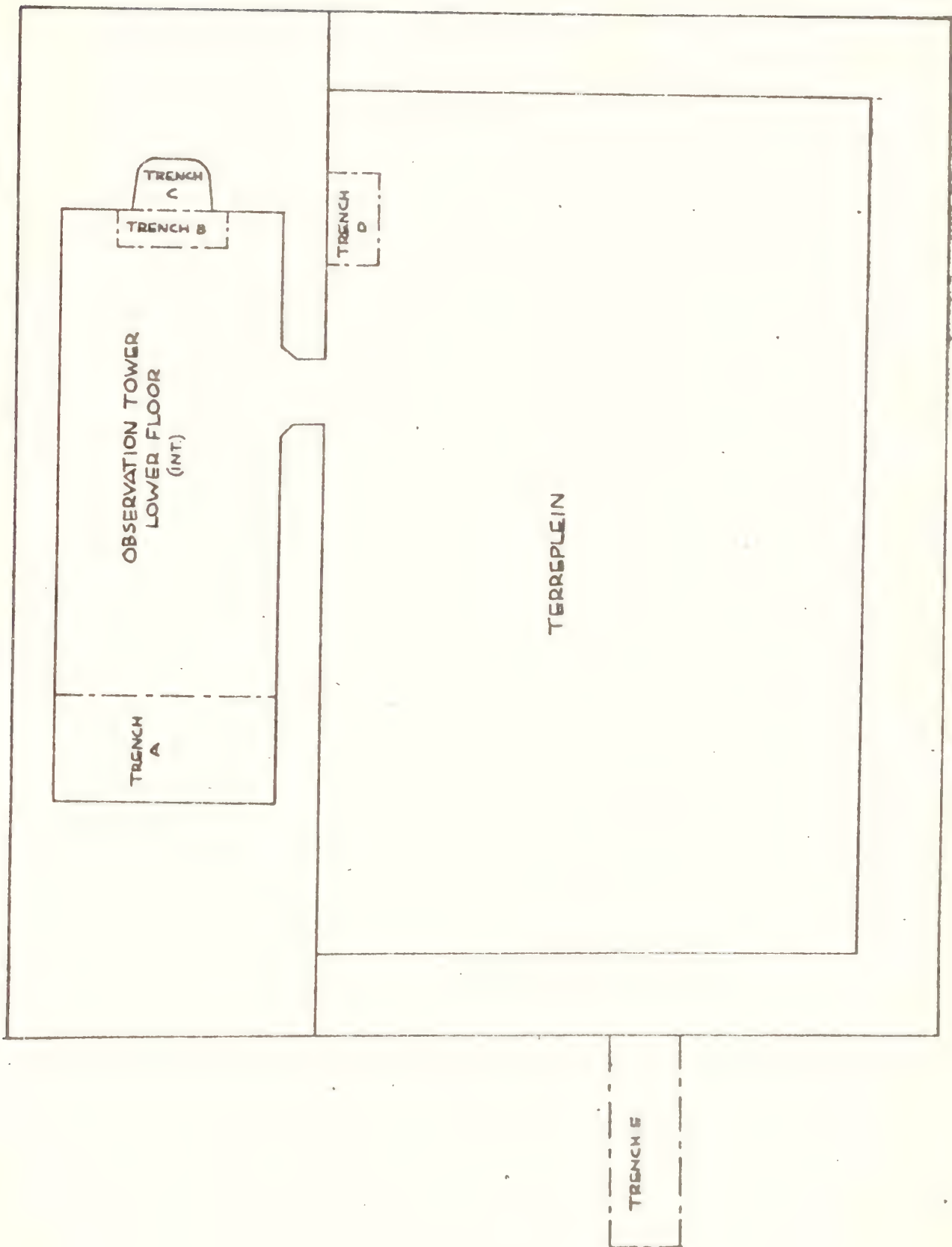


Illustration G-3

**OVERALL
EXCAVATION
PLAN**

FOMA
SEPT. 1978
SCALE 1:50

N

TABLE 1

Location of Test Units - FOMA 1978

<u>Unit</u>	<u>Location</u>	<u>Length Orientation</u>	<u>Dimensions</u>	<u>NE Corner Location</u>
Tr. A	lower floor, observation tower	N-S	1.5m x 3.04m	1.5m E. of room's NW corner, on N. wall
Tr. B	lower floor, observation tower	N-S	.5m x 1.5m	.8m S. of room's NE corner, on east wall
Tr. C	lower floor observation tower	---	-----	complete interior area of 1978 hearth at room's east end
Tr. D	main terre- plein	E-W	1.25m x .75m	1.13m W. of terre- plein interior NE corner, on exterior S. wall of lower floor room
Tr. E	perpendicular to west scarp exterior	E-W	1m x 3m	4.61m N. of fort exterior SW corner on west wall (1978 grade)

The datum plane in the main terreplein was also located at 1.48 meters above the top of the cordon. The point on the cordon from which the terreplein datum was established was located directly below the center of the gun emplacement opening on the terreplein east parapet.

The excavation unit perpendicular to the west scarp used a plane below the top of the cordon on the west face. This plane was 2.30 meters below the top of the cordon, measured from a point on the cordon 4.20 meters north of the fort exterior southwest corner (along the cordon).

The mean sea level elevation of the mean terreplein's interior surface at the southeast corner was determined by a NPS-contracted survey team. From this, the mean sea level elevations of the datum planes was determined as:

observation tower lower floor: 5.62mmsl
main terreplein: 5.43mmsl
exterior excavation: 2.91mmsl

For purposes of consistency and comparability, all elevations in this report will be given in meters above mean sea level, although some of those in Trench E will be expressed as negative (-) elevations.

Excavation Procedures

Units were excavated by 10 centimeter levels within naturally occurring deposition zones. Soil from culturally significant, or artifact-bearing deposits was screened through $\frac{1}{4}$ " mesh screen; and cultural and physical samples were assigned individual field specimen numbers by provenience. Features (those intrusional areas in the ground believed to have been the result of specific behaviour events) were given site-wide consecutive numbers; and areas (those intrusional areas in the ground of uncertain origin) were assigned letter designations within excavation units. All features and areas were mapped, photographed and excavated separately; as were all floors and surfaces (see Illus. G-14 through G-19 for provenience data guide; Illus. G-21 for artifact catalogue and G-20 for architectural sample numbers).

Soil samples for hygrometer moisture analysis were taken from each provenience (levels, zones, areas, features) and all architectural deposits (floors, fill, paving, etc.) were samples and retained (Illus. G-20). All units were profiled and photographed, and both plane and profile maps are included in the excavation results section.

Unusual or irregular methods were required in two instances; the terreplein and exterior excavation units. In the former, a 35 centimeter thick concrete cap was present, which required removal with sledge hammers, chisels and spikes due to the absence of power sources (other than human) on the island. This resulted in a somewhat smaller excavation unit than was originally planned.

The exterior west foundation excavation encountered ground water at approximately 90 centimeters below surface, while excavations had to continue to a depth of over 2 meters below surface to expose the foundations. In this unit, a hand-operated diaphragm

pump was used to control the water, and the unit was vertically stepped from east to west, to control sand slumping due to water seepage from below.

6. The Excavations

Lower Floor - Observation Tower (present grade elevation ca. 4.38mmsl)

Three trenches, in the positions shown in Illustration G-3, were excavated in the Observation Tower Lower Floor (OTLF). The disturbance and renovation history of this area resulted over the years in considerable rubble and debris fill below the present grade. That this fill is the result of clearing and repair is apparent in the total absence of artifacts from this room. Deposits which occur as the result of human occupational activities contain material by-products of those activities. Since no such by-products were recovered from the OTLF trenches, it is strongly suggested that renovation activities extended at various times down to the colonial grade.

Trench A

Illustration G-4 (a-b) shows the east profile of Trench A, providing data on floor, feature and fill sequence in the trench. A deteriorated mortar floor (consisting of mortar and rubble) at ca. 4.32mmsl, was encountered in patches without the shell aggregate typical of tabby. This was designated Floor 1, and is believed to represent a surface of building rubble and debris, tamped and packed by use. This deposit was at one time the sub-flooring for a concrete floor, which is evident in the northwest corner of the trench as a small projection from the wall at 4.35mmsl. This floor was broken out of the room at some previous date, and is believed to correspond to Floor 1 in Trench B.

Below the elevation of Floor 1; sand, mortar chunks and other rubble fill extended to a depth of 4.12mmsl. That this deposit is modern (post 1917) debris, is evidenced by the presence of a ceiling beam support within the deposit, which is identical (even to the paint) to those presently in the ceiling of the room. This may represent Deyo's 1924 rebuilding of the upper floor, or the 1937 relaying of the arch in the upper floor. Much of the rubble in the fill of this deposit is highly similar to the mortar and material in the present western ceiling slab. Since this deposit extends to a depth of 3.66mmsl it is reasonably certain that anything above this level dates to post 1920, and that 3.66mmsl was probably the grade at that time.

1 METER BELOW DATUM

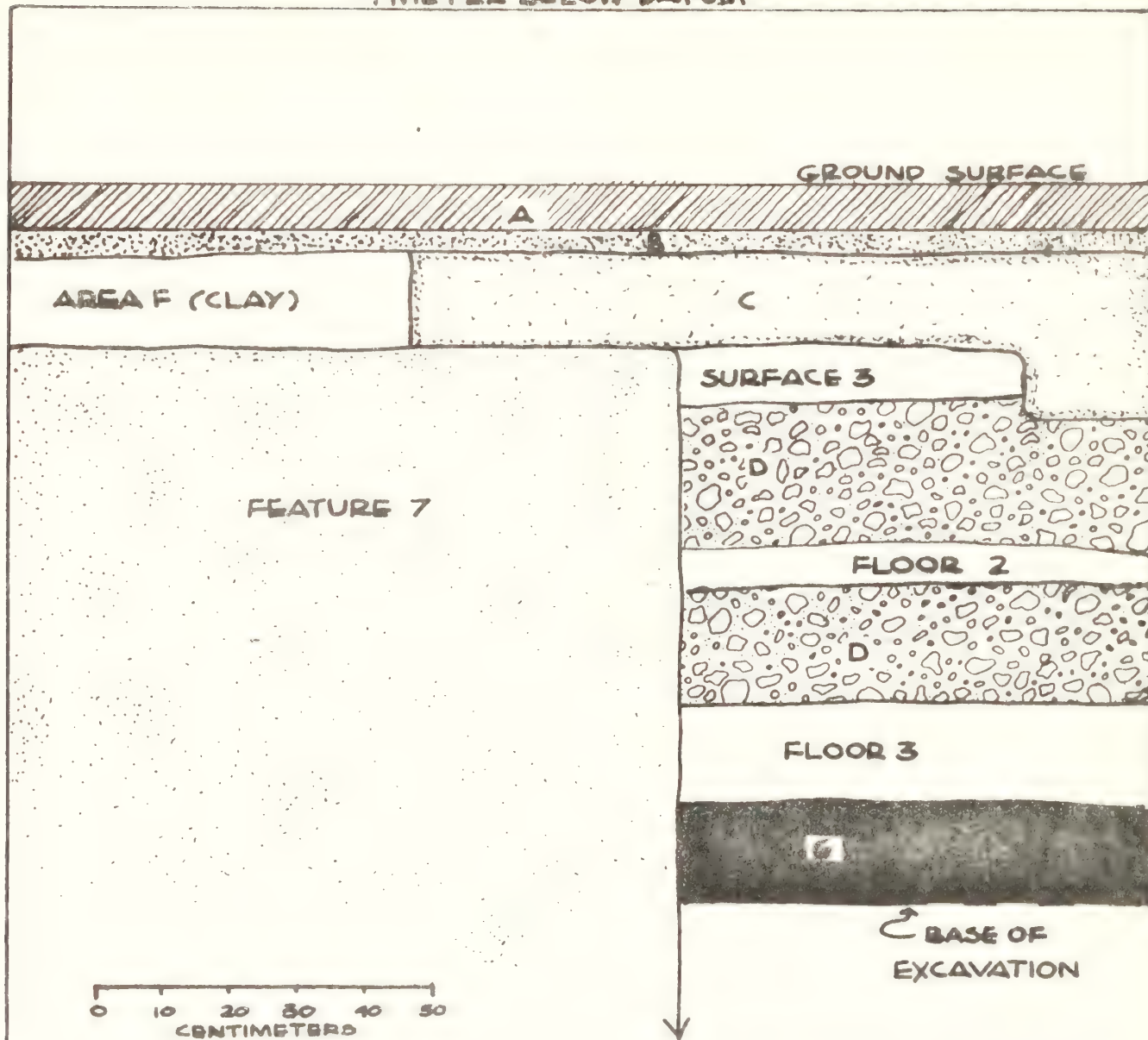


Illustration G-4a

FOMA 1878

**TRENCH A, EAST PROFILE
(NORTHERN 1.7 METERS OF PROFILE)**

KEY

- A- Black soil, modern rubble
- B- Grey-brown sand; rubble (Fl. 1)
- C- Crushed orange coquina
- D - Oyster shell, coquina, mortar rubble in sand
- G- Grey-green clayey mud



Illustration G-4b
Trench A, East Wall Profile
(Northern 1.7 Meters of Wall)

At 4.12mmsl, a broken mortar surface, quite deteriorated, was encountered. This was 9 centimeters thick, and was designated as Surface 3 (Surfaces 1 and 2 revealed themselves as rubble deposits upon excavation). Below Surface 3, several features were encountered, which probably date to the colonial period. The first and most predominant of these was a coquina slab platform, extending from east to west across the north end of the Trench (Illus. G-5). Designated Feature 7, the platform (4.21mmsl) was covered on the top and south face with lime mortar and patches of grey-green clay. The top was covered with a cap of this clay (area F) 14 centimeters thick (Illus. G-5). The top of the mortared blocks was encountered at 4.21mmsl, and was 1 meter wide (N-S). The feature extended in its entirety well below the base of the excavation, into the mud fill beneath the earliest grade level in the room. The size and position of this feature suggests that it served as a platform bench (similar to that in the Castillo de San Marcos Seminole room) in its above-grade portion; and as part of the foundation system of the fort in its below-grade portion, since it appears to extend indefinitely into the fill beneath the fort.

The earliest colonial grade in this room (and the second feature mentioned above) is located at 3.58mmsl and designated as Floor 3 (Illus. G-5b). This is an intact, 15 centimeters thick tabby floor with a deteriorated surface. It was poured up to the south edge of Feature 7, and rests on grey-green clayey-mud (fill beneath the room, see Illus. G-5c). A core sample taken below the base of Floor 3 indicated that this clay-mud fill extended at least another 18" below the base of the excavation. This floor is 25 centimeters lower in elevation than the lowest floor encountered on the terreplein.

During the period that Floor 3 was in use, the stone platform was present, with a height of 50 centimeters. At some later date (prior to the fort's abandonment in 1821) the fill represented by layers "D" in Illustration G-4a was added, first to an elevation of 3.82mmsl, at which another tabby floor was poured. This floor, designated Floor 2, was a badly deteriorated tabby floor in patches over the trench, and with no visible wear surface. The deposit, however, was of consistent thickness (7 to 10 centimeters) and composition (lime mortar with shell aggregate) at an elevation of 3.82mmsl (top). At the time when this floor represented the grade, the stone platform (Feature 7) would have been present, and 30 centimeters high (40 centimeters if the clay cap was present at that time). Since no artifact material was recovered, assigning an absolute date for this floor is not possible.



Illustration G-5a
Trench A - Feature 7
(Coquina Platform facing north)



Illustration G-5b
Trench A, Floor 3 (Designated Floor 5
in field records; Floor 3 in report)



Illustration G-5c
Green-gray clayey mud fill below Trench
A in observation tower lower floor

A third floor, Surface 3 (mentioned above), was the third and final floor believed to have dated from the colonial period. This would have been the last colonial floor at the fort, and would have been the most subject to the effects of abandonment and of the elements; thus accounting for its poor state of preservation. This grade level is at the top of Feature 7, rendering it a sub-surface feature at that time. The fill beneath Surface 3 was mixed sand, rubble and mortar chunks. The elevation of this grade (4.12) is at almost exactly the elevation of the floor in relation to the exterior cordon, as that recorded in the 1934 HABS drawings of Fort Matanzas (at that time the OTLF floor was at the same elevation as the top of the cordon). This further supports the interpretation that this grade and surface represent the latest colonial floor in the tower.

The excavation of Trench A, in addition to the information concerning grade and floor sequences, also revealed that the west crack in the observation tower (shown in the 1912 photo, Illus. D-4), is present beneath the window in the OTLF, and extends north to south across the excavation unit at the top of and all the way through Feature 7 (see Illus. G-5). This suggests that the 1916 repair work did not extend to this depth.

Information about the fill beneath the room (described above) was also recovered. This hard-packed clayey-mud fill, was identical to that encountered in the terreplein trench at 3.53mmsl, and was encountered in Trench A at 3.44mmsl. (See Illus. G-21 for FS# of this fill sample).

Trench B and Trench C

(Trench B present grade - 4.41mmsl)

Trenches B and C were placed in front of (B) and inside of (C) the existing hearth in the east wall of the OTLF to check for the historic position and shape of the hearth. Further archeological confirmation will be needed to determine a definitive answer to those questions, but the excavations in those areas did suggest that the present fireplace is not at the elevation of the colonial one(s), and also confirmed the floor sequence noted in Trench A.

At the ground surface of Trench B, a large firepit (Area B) intruded into the trench from the top of the ground, to a depth of 3.67mmsl. The fill (burnt rubble and oyster shell) and the modern point of initiation suggest that this is a result of campers or visitors in the twentieth century. This large disturbance left the trench's south profile intact, however, and this profile is shown in Illustration G-6, a-b.

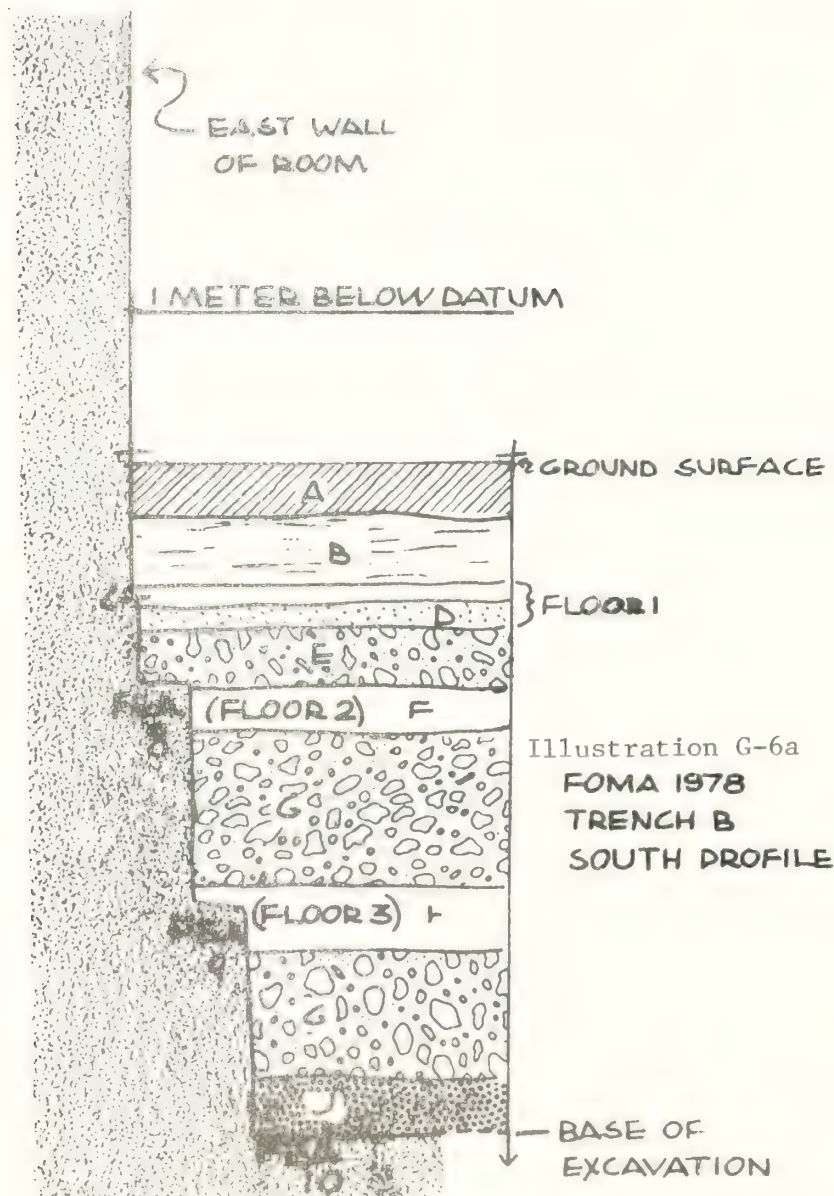


Illustration G-6a
FOMA 1978
TRENCH B
SOUTH PROFILE

0 10 20 30 40 50
CENTIMETERS

KEY

- A- Black soil, modern rubble
- B- Grey-brown sand & rubble
- C- Grey concrete (Floor 1)
- D- Crushed coquina & mortar rubble
- E- Crushed shell, rubble & sand
- F- Tabby flooring
- G- Brown sand with crushed shell
- J- Mixed clay, mortar, shell



Illustration G-6b
Trench B, South Profile

Floor 1 designated in Trench B, was of modern grey concrete over mortar rubble, and corresponds to the Floor 1 remnant in the northwest corner of Trench A. Below this level, several interesting features were encountered.

At 4.06mmsl (the same elevation as the top of Feature 7 and of Surface 3 in Trench A), the east wall of the pit just below the present hearth level extends westward into the pit as a coquina ledge, 18 centimeters wide. From this, a tabby floor extended over the excavation unit. This floor was composed of soft lime mortar and crushed shell aggregate, 6 centimeters thick. The coquina ledge from which Floor 2 extended (designated as Feature 8) showed indentations, appearing to be wear surfaces, near the center of the hearth. These indentations (on the edge of the ledge) described a lower wear area 90 centimeters wide (see Illus. G-7) along the west edge of the feature. This may have been related to earlier hearth activity in the room, although it probably does not represent the earliest position of the fireplace.

A third floor was encountered in Trench B at 3.87mmsl, extended out from, and partially covered, a second coquina ledge (Feature 9). This ledge was 17 centimeters wide, extending west from the west edge of Feature 8. The floor associated with Feature 9 (Floor 3) was quite deteriorated, and badly disturbed by the Area B intrusion. Portions of the floor were recovered, however, and these exhibited smooth finishing on the tabby, as well as evidence of burning (see Illus. G-20). The elevation of this 10 centimeter thick tabby floor conforms closely to that of Floor 2 in Trench A. The charring of the recovered floor samples may be suggestive of a hearth at this elevation at some period, but may also be the result of burning activities in the modern Area B intrusion.

Below Floor 3 and the fill beneath it in Trench B, a third coquina ledge was encountered, designated Feature 10. This was present at an elevation of 3.57mmsl, the same elevation as the lowest floor (Floor 3) in Trench A. The ledge was plastered on the top surface. Time limitations on the project, the unexpected complexity of deposits, and the disturbance to the trench by Area A, combined to make complete exposure, observation and interpretation of this feature impossible (it was discovered with less than one hour of the allotted project time remaining). Illustration G-7 shows the relationship between the three ledges.

Based on the pattern observed in the room's other trench, however, as well as on the mortar cap on the top of Feature 10, it seems quite likely that a floor will extend over the room at the top elevation of the feature (3.57mmsl: the same floor as that

represented by Floor 3 in Trench A). The feature extended for at least 20 centimeters west from the west edge of Feature 9, although the west edge of Feature 10 was not located. At this stage, it is hypothesized that the three-stepped coquina ledges represent hearth locations during the three stages of grading and occupation reflected in the floors of both Trench B and Trench A in the OTLF. As the grade rose, the fireplace was filled and set slightly back, which would suggest also that the east-west depth of the hearth interior grew narrower through time. Further excavation will be needed to determine the extent of Feature 10 ledge; the presence or absence of a floor at that level, and to investigate the possibility that the three ledges represent raising, and making narrower, the fireplace in the east wall.

The fills between Floors 2, 3 and Feature 10 in this trench consisted of sand and rubble, and contained no artifacts other than a few shards of green glass.

Illustration G-8 shows the hearth level as it was at the Feature 8 (Floor 2) level grade. The blocks are mortared in place, and it is suspected that similar surfaces will be present at each of the ledges and floor levels in this trench.

The Terreplein Excavation (present grade ca. 4.56mmsl)

A unit of 1.25 x .75 meters was excavated on the terreplein (Trench D). Illustration G-9 (a-c) shows the profiles of this unit. The reduced size of the trench was made necessary by the presence of a concrete cap over the surface of the terreplein. The upper cap (Floor 1) was of cement, 5 to 7 centimeters thick. Below this was a thicker layer of cement which contained crushed coquina shell and whole coquina shell as an aggregate. This was an extremely hard concrete, and was not of colonial origin. It ranged from 30 to 35 centimeters in thickness, and was removed with chisels and sledge hammers. The pour itself varied in thickness, even in the small area sampled by Trench D.

Floor 2 rested on a layer of coquina block at 4.26mmsl. In small patches between Floors 2 and 3, a third layer of loose brown soil was encountered, no more than 1 to 2 centimeters thick, and present only in patches. Floor 3 rested on a series of crushed coquina and loose sand layers, differing in color and consistency. Layer 1 (3.98mmsl) was of crushed, loose, orange coquina shell, 5 centimeters thick. Layer 2 (averaging 32 centimeters thickness) was loose white beach sand mixed with coquina shells, and Layer 3 (top: 3.71mmsl) consisted of coquina, crushed shell, sand and mortar rubble averaging 15 centimeters in thickness.



Illustration C-7
Trench B, Features 8, 9, 10
Top view



Illustration G-8
Trench C - Hearth interior at
Feature 8 (Floor 2)

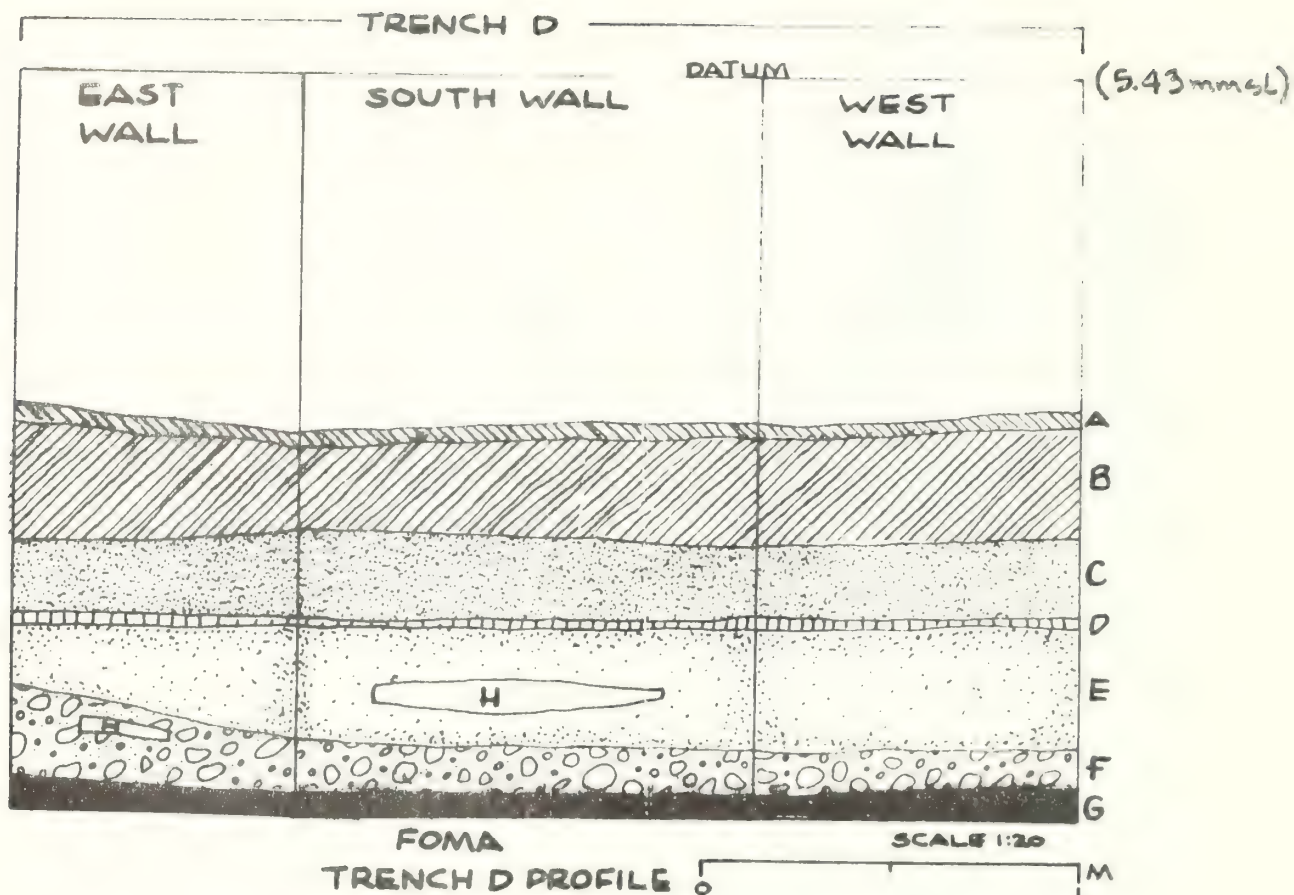


Illustration G-9a

<u>KEY</u>	
A-	Floor 1; Grey concrete
B-	Floor 2: Concrete with coquina aggregate
C-	Floor 3: Coquina Block
D-	Layer 1: Crushed orange coquina
E-	Layer 2: Loose beach sand and coquina shell
F-	Layer 3: Mortar and tabby rubble
G-	Grey-green, clayey mud
H-	Mortar and shell rubble (loose lenses)



Illustration G-9b
Trench D (Terreplein)
East Profile



Illustration G-9c
Trench D (Terreplein)
North Profile

These layers of coquina and sand rested on a base of grey-green, compacted clay with patches of white beach sand on the surface (3.61mmsl). Coring revealed that this clayey-mud continued for at least 18" more below the base of the excavation, and is believed to be the fill beneath the terreplein. It is the same material found in Trench A beneath the lowest floor in that room, and was present at 3.58mmsl there; an elevation highly consistent with the suggested fill elevation in Trench D.

No artifacts were recovered from this excavation unit; in fact the only materials other than construction debris were large quantities of rat bones, undoubtedly from the many rats that inhabited the fort prior to the present administration of the monument.

The north wall of Trench D was the south wall of the observation tower lower floor. Illustration G-9c shows this profile, revealing that the coquina blocks of the wall extend to the base of the excavation, and, as probing indicated, down into the terreplein fill. It was beyond the scope of this investigation to determine the total depth of this wall. Illustration G-9c shows a large, vertical crack in the foundation of the OTLF south wall, beginning at the base of Floor 2, and extending to the base of the excavation. Approximately 10 to 20 centimeters wide, the crack was in the same position as that shown in the early photographs of the fort south wall (see Section 4), and appears to be a below grade extension of that crack. This was repaired above grade in the 1916 tower restoration, indicating that at that time the grade level was at the base of Floor 3 (3.71mmsl), since the crack today begins at the base level of that floor.

As in the trenches in the observation tower lower floor, the dating of the layers in Trench D is difficult due to the absence of artifacts. The extensive disturbances and subsequent renovations on the terreplein also contribute to this difficult interpretive situation (see Section 4). Floor 3 and Layer 3 are felt to represent significant events at the fort, while the intervening layers and floors seem to represent filling and capping operations at specific points in time.

Floor 3, and the coquina block layer, is interpreted on the basis of the archeological evidence, to represent Deyo's 1924 rebuilding of the terreplein floor. This was probably rebuilt to the elevation of the latest, 1806 colonial terreplein reflooring. The bases for this interpretation are: (1) Floor 3 is within 1" of the 1934 HABS drawings of the fort, in relation to the exterior stone cordon of the fort. It is also within 3" of Lt. Scrivens'

measurement of the terreplein floor from the top of the parapet. (2) Floor 3 is 25 centimeters higher in elevation than Trench A's Floor 2, which appears to represent the latest colonial grade in that room (see preceding page). Table 2 compares floor elevations in Trenches A, B, and D, and shows that the floors in the terreplein are consistently 25 centimeters higher than those in the lower floor room, strongly suggesting a temporal correlation between the last colonial floor grade and Floor 3 in the terreplein. (3) The extent of disturbance to the terreplein in 1924, and the nature of Deyo's repair work, indicate that the surface existing at that time (presumably the 1806 surface, since no other work had been done between 1806 and 1924 on the terreplein), would have been removed and replaced, probably to the same elevation. (4) The initiation of the crack at the base of Floor 3 indicates that Deyo's repair work did extend down to that level.

The concrete cap represented by Floors 1 and 2 was most likely laid down after 1924, at some undocumented time.

Layer 3, however, was comprised of mortar rubble and coquina, and seems to have represented a badly deteriorated or disturbed floor. The top of Layer 3 (3.71mmsl) is five centimeters above the earliest colonial floor in Trench A, and this difference is so small as to strongly suggest contemporaneity. The floor, which rests directly upon the clayey fill, would have been constructed of tabby, with coquina shell aggregate, and is interpreted here as the earliest colonial grade on the terreplein.

Exterior Excavations

(present grade at center of Trench E east side - 1.91mmsl)

A 3-meter by 1-meter trench was excavated, placed perpendicular to the west face of the fort at present ground level. Profiles of this trench, seen in Illustrations G-10 (a-b) and G-11 (a-b), illustrate the objectives of this trench; that of determining the nature of the fort foundations.

The south profile of the trench (Illustration G-10, a-b) reveals the sequence of events at this part of the fort foundations. Layers B and C, and related deposits, represent fairly recent (twentieth century) activity. B is a layer of packed oyster shell extending west from the fort wall for a distance of 2.4 meters. Beginning at five centimeters below the present grade surface, it is 30 centimeters thick at the maximum. At the western end of this layer several coquina slabs were recovered, and are probably part of the 1935 stabilization project. The shells and rocks rest on a series of thin, humic-stained layers and crushed coquina lenses,

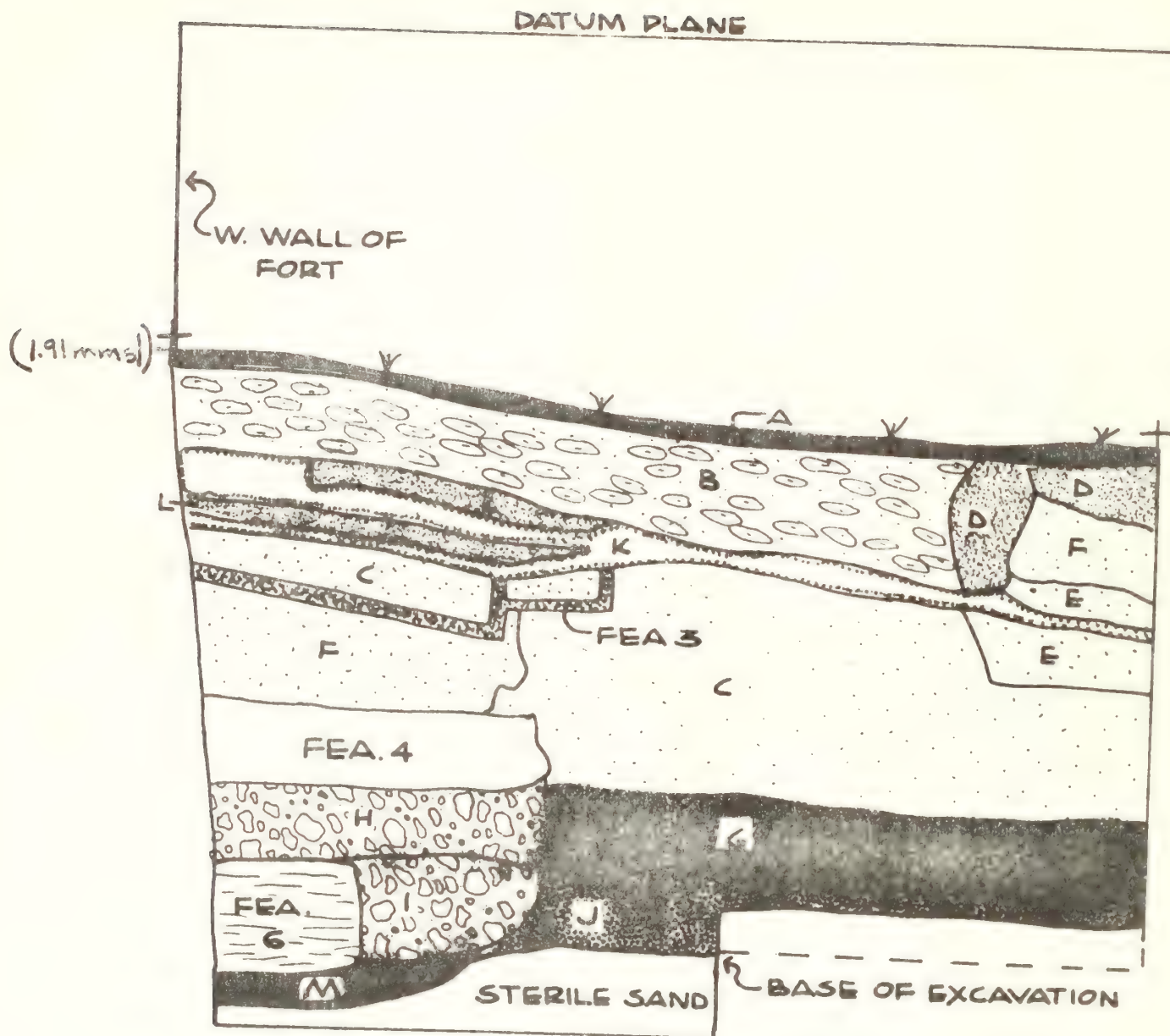


Illustration G-10a
FOMA 1978
TRENCH E
SOUTH PROFILE

KEY

A- Modern humus
B- Oyster shells
C- Brown mottled
white beach sand
D- Coquina block
E- Grey mottled
white beach sand
F- White beach sand
G- Zone 4: black mud
with shells
H- Area L: brown mud
with shells

I- Grey mud, rubble
& shells
J- Grey mud, crushed
shells
K- Brown humic stained
sand
L- Crushed coquina lens
M- Consolidated crushed
shell



Illustration G-10b
Trench E - South profile
(East 1.5 meters of trench)
Upper 1.1 meters of trench

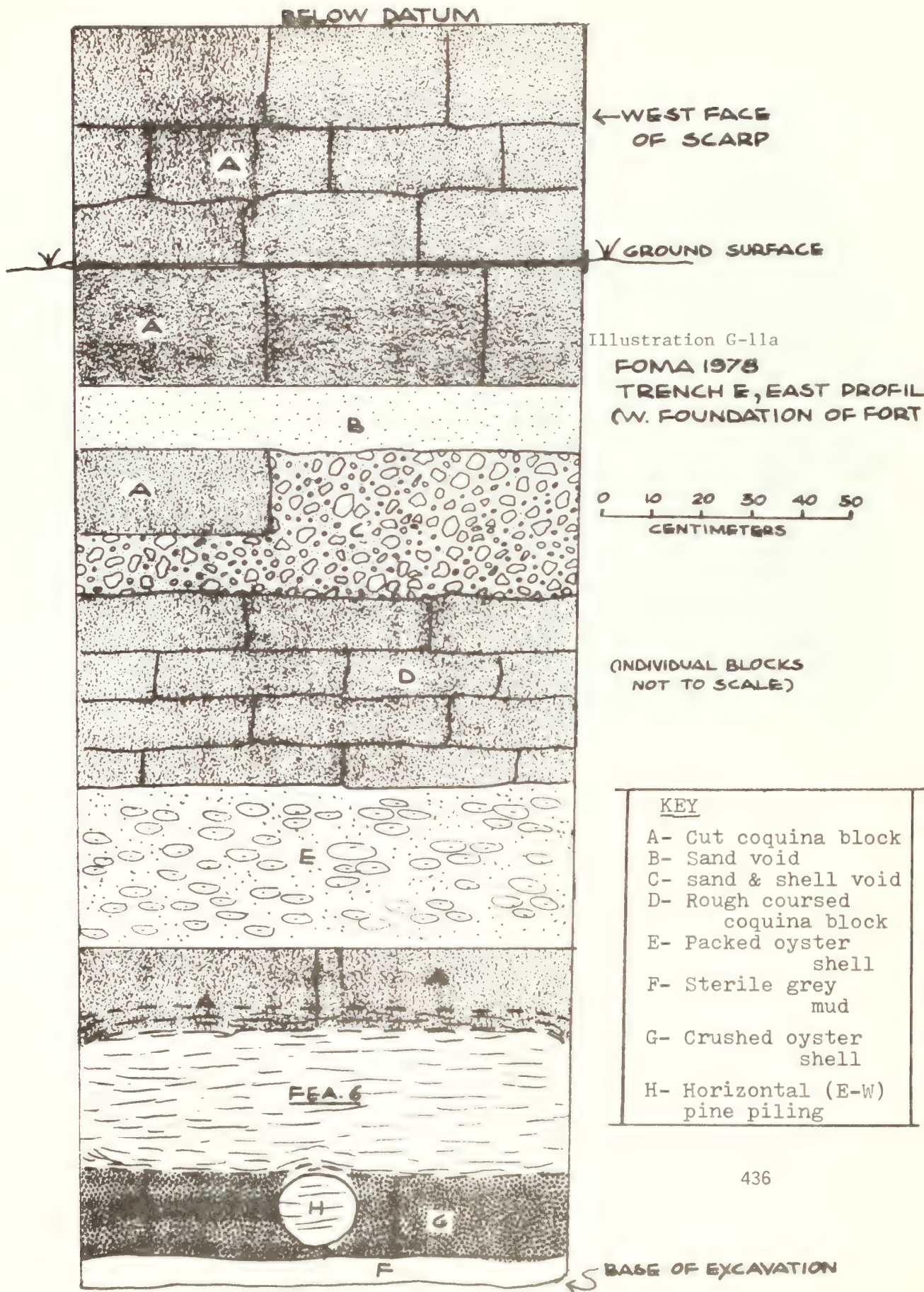




Illustration 11b
Trench E - East Profile showing
Fort foundations

which may represent humic debris and storm deposit dating to just prior to the 1935 stabilization. Feature 3, below these layers (Illustration G-10b), is particularly interesting in its regularity and angularity. This is a brown humic stain present on all trench walls except the west wall, and seems most likely to have been stained from rotted planking, boards, or wood boxes. Feature 3 is present in a matrix of white beach sand, which extends to a depth of 1.75mmsl. At this level, direct evidence for the foundation of the fort, and for a possible late-eighteenth century repair of it were encountered.

Feature 4, directly adjacent to the fort wall at .74mmsl is a concentration of coquina block, rubble and shells, which yielded several architectural samples, including white plastered coquina block, and lumps of decayed pink plaster (FS #21). This appeared to have been a deposit of materials fallen from some part of the fort. Feature 4 rests on a zone of mud and packed oyster shells, designated as Zone 4 to the west of Feature 4's base; and as Area L directly below Feature 4.

Zone 4 (top: .61mmsl) extended down to a layer of grey mud and crushed shell at .26mmsl (Layer J), which bottomed at sterile sand at .16mmsl. The zones extended to the west beyond the 3 meters excavated in the trench. Zone 4, Feature 4, and Area L all contained ceramics dating to between 1780 and 1800 (see Illus. G-21). Layer J yielded no artifact material.

Area L, adjacent to Zone 4 and beneath Feature 4, had browner soil and contained far more construction debris than did the zone. At the base of Area L, two deposits were present. Directly adjacent to the fort wall was a pine log extending from north-south along the width of the trench. Designated as Feature 6, the log was 50 centimeters wide, 30 centimeters thick and plastered on top and bottom. Length could not be determined, since it extended into both the north and south balks of the trench. Top elevation of the log was .38mmsl. Adjacent to the west edge of the log was a deposit of heavily concentrated shell mortar, building rubble and grey mud (Area 1). Below Area 1 and Feature 6 in the south profile was a layer of grey mud and crushed shell, believed to be an extension of the Layer J below Zone 4.

Illustration G-11 (a-b) shows the stratigraphic situation of the east wall of the trench, against the fort foundation itself. Feature 6 rests against coquina blocks on the fort's west face, and rests above a horizontal support log extending east-west underneath the fort foundation at .08mmsl. The base of this

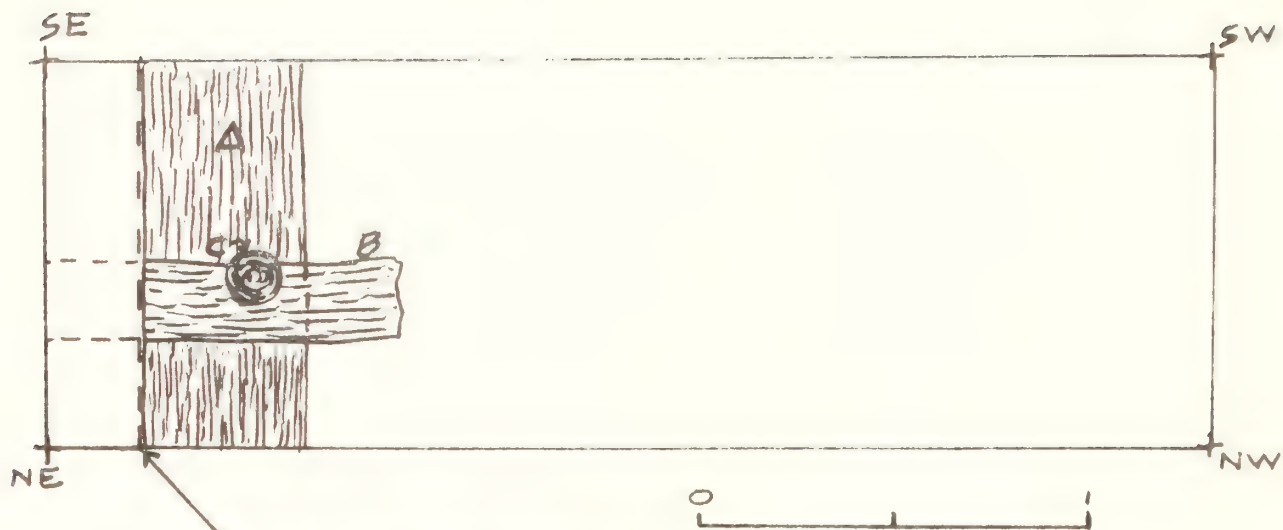
support log was notched to receive the upper end of a vertical pine piling at -.04mmsl. The vertical piling was 6.25 or 10 centimeters in diameter and extended into sterile mud for an unknown distance (Illus. G-12).

Since Zone 4, Area L and Feature 4 all contain ceramics, including pearlwares dating from 1780-1800 TPQ (Noel-Hume 1970); the principal of terminus post quem demands that all deposits above .31mmsl must date to post 1790. This includes those deposits adjacent to, and directly above Feature 6. It does not include Layer J, which initiated at .29mmsl, and which contained no artifacts. Layer J was also a different color and consistency than the Zone 4 above it. Present evidence suggests that Zone 4, Feature 4 and probably Feature 6 are the result of the documented 1796 repair of the foundations by Clemente de Salas. There is no evidence to suggest that the horizontal support log or the vertical piling, or the deposits at that level were subject to this repair or to other disturbance; however, there is only the negative evidence of no artifacts to indicate that they were not. Much of the confusing stratigraphic situation adjacent to the fort wall may also have been due to erosion and deterioration of the wall itself.

The decay of the wall is revealed in the sand- and shell-filled voids seen in profile. The upper void (sand-filled) extended for 38.5 centimeters into the fort wall, while the shell fill of the lower void was not removed in excavation. The position of the voids (as those portions of the wall most subject to erosion and ground surface activity disturbance), the change at that level in the size of the coquina blocks, and also the top of Feature 4 in profile (as a possible result of wall segments deteriorating and falling to the ground) all combine to suggest that the construction grade for the fort was between .7 and 1.0 meters below the grade of today (1.21mmsl to .91mmsl).

7. Summary of Interpretations

The excavations at Fort Matanzas answered the basic questions (other than the fireplace positioning) raised before the project; and also raised several new ones. This section will summarize the data relevant to the project goals, and outline those areas needing further investigation. The reader is urged also to read the complete excavation data section for complete detail, and for the data base justification of the interpretations summarized here. Table 2 particularly should be consulted.



EDGE OF FOUNDATION
AT BASE OF EXCAVATION

1 METER

Illustration G-12

Δ - FEATURE 6 : TOP :

.38 MMSL

FOMA-1978

B - HORIZONTAL SUPPORT

BEAM : TOP : .08 MMSL

TRENCH E - BASE

WOOD PILINGS

C - VERTICAL PILING :

TOP : -.04 MMSL

Lower Floor Observation Tower

Colonial Grade and Floor Surface: The lowest (and probably earliest) grade level and floor occurred at 3.57mmsl, and was a tabby floor with a deteriorated finish surface. In Trench A, the floor was represented by Floor 3, and in Trench B by the mortar cap on Feature 10.

A second probable grade was located in the room at 3.36 to 3.87mmsl. This was Floor 2 in Trench A and Floor 3 in Trench B. In both trenches a tabby floor (broken) was present at this elevation, and in Trench B the floor exhibited burning or charring on the surface. Since no artifacts were present in the fill above or below this floor, the date for it is impossible to determine in absolute terms; however, all evidence suggests that it dates between 1740 (lowest grade) and the next grade level above it (pre-1805).

The third and most recent colonial grade level in the room was present at 4.12mmsl, represented by Surface 3 in Trench A, and Floor 2 in Trench C. These were both crumbling and deteriorated tabby floors of soft lime mortar and crushed shell aggregate. This floor level was probably the final colonial floor in the fort, and the floor extant at the time of Deyo's 1916 renovations.

The uppermost sub-floor grade (post colonial) was located at ca. 4.27mmsl, and was comprised of cement over crushed coquina and mortar rubble. Floor 1 in both trenches (and Layer B in Trench A) represent this floor, which was laid down subsequent to the renovation projects of 1924-25, and probably subsequent to the 1934 HABS survey drawings of the fort. (Illus. D-24)

Examination of the floor samples retained from excavation (see Illus. G-20) by historical architects on the project should provide further insight into the nature and associations of the floor materials themselves.

Furnishings: Two lines of evidence for possible built-in furnishings were present in the lower floor room. The most significant of these, Feature 7, was a plastered and clay-coated coquina slab platform in the northwest corner of the room. The top of this feature (4.12mmsl) was 50 centimeters above the lowest floor in the room, and was 1 meter wide. The feature extended for an unknown distance eastward along the room's north wall. This appears to have been an above-grade furnishing platform, 50 centimeters high at the earliest period of the fort's occupation. It may also function as part of the north wall foundation since

it extends into the clay fill beneath the lower room for an undetermined distance. At the second colonial grade level, this feature would have appeared as a curb or low bench 25 centimeters high, and by the latest grade level, the top of the platform would have been level with the floor, and no longer visible. It is with this uppermost colonial grade that the second furnishing evidence is believed to have been associated. This evidence is above grade, also in the northwest room corner, consisting of three square indentations in the north wall, at 4.92mmsl (top), measuring 10 centimeters square, and extending along the north room wall from east to west (Illus. G-13a). In addition to these holes, there is a 3 to 5 centimeter-wide wear scar sloping from the top of the westernmost hole on the north wall, along the west wall for 2.47 meters to an end elevation of 4.87mmsl (Illus. G-13b). If these scars represent a platform bench of wood, it would have been 2.47 meters wide, 5 centimeters thick and of an undetermined length. At the present grade elevation, its top would have been 70 to 86 centimeters above the top of the ground (N-S slope of platform); at the latest colonial grade level it would have been 1.10 to .94 meters above the top of the ground; at the grade represented by Floor 2 the platform would have been 1.40 to 1.24 meters above the ground, and at earliest colonial grade, such a platform would have been 1.49 to 1.65 meters above the ground.

The only below grade evidence for any kind of platform support was found in the southwest section of Trench A, and was a postmold directly opposite the south end of the scar on the west wall (Illus. G-13c). This feature, however, initiated at 4.44mmsl, high up in the deposit dating to post 1916, and thereby could not have been associated with a colonial platform. Given the above ground elevations discussed above, the only reasonable association for the hypothesized wooden platform would have been the final colonial grade occupation (4.12mmsl) which covered Feature 7. A platform, at this almost certainly second Spanish period grade level, could have replaced the function of the earlier stone platform. It was no longer present at the time of Scriven's 1885 description of the fort. Unfortunately, the extent of below-grade disturbance and repair make the likelihood of such fragile evidence as postmolds' survival quite low.

There is associational and historical evidence for the seemingly simplistic interpretation that the three grade levels in this room represent (from lowest to highest) 1st Spanish, British, and 2nd Spanish period renovations. There is no evidence to negate this hypothesis, and pending further investigation, it stands as the strongest explanation.

The Terreplein

The questions of grade, flooring and fill materials on the terreplein were answered in Trench D. Only two possible grade surfaces were encountered; Floor 3 of coquina block at 4.26mmsl, and Layer 3 of mortar rubble at 3.71mmsl. The former is interpreted as the surface replaced by Deyo in 1924, and the latter as the remnants of the earliest grade on the terreplein, which would have been tabby. This layer was poured directly upon the grey-green mud and clay fill below the terreplein (identical to that below the lower floor room). Table 2 shows the elevation relationships between the terreplein and lower floor room's various surfaces and grades.

TABLE 2

Correlation of floors and grades in Fort Matanzas

	<u>Trench A(OTLF)</u>	<u>Trench B(OTLF)</u>	<u>Trench D(Terreplein)</u>
present grade	4.38mmsl	4.41mmsl	4.56mmsl
	4.35mmsl (concrete- NW corner)	Floor 1 4.27mmsl	Floor 2 4.51mmsl
	Surface 3 4.12mmsl	Floor 2 4.12mmsl	Floor 3 4.26mmsl
	Floor 2 3.82mmsl	Floor 3 3.87mmsl	
	Floor 3 3.58mmsl	mortar cap on Feature 18 3.57mmsl	Layer 3 3.71mmsl
clay fill	3.44mmsl		3.61mmsl

The Foundations

The excavation of Trench E revealed both the nature and depth of the fort's foundations, and also the fact that repairs were made at some time near 1790-1800.



Illustration G-13
Above grade indication of wooden platform
A- Square holes in north wall
B- Sloping scar in west wall
C- postmold in Trench A

The base of the fort's west wall extends to a depth of -.08mmsl, or 2.01 meters below present grade at the center of Trench E. Coquina block construction (with numerous void areas) extends to 1.36mmsl, resting on a layer (33 centimeters thick) of packed shell, above a coquina block layer of 45 centimeters thickness, which rests on the lowest layer of the foundation: 15 centimeters of crushed shell.

At .37mmsl., a pine log system of support was encountered seen in Illustrations G-11b and G-12. This consisted of a vertical piling 20 centimeters to the west of the base of the foundation, over which an east-west support beam was placed, extending underneath the fort wall. Above this, a massive north-south horizontal log was placed against the wall of the fort (leaving, in fact, bark impressions on the coquina blocks of the wall). This upper log was plastered on the top and bottom surfaces (but not the sides). The wooden support system was surrounded by a .50 meter thick layer of mud and oyster shell, which extended to the west of the fort for a distance greater than 3 meters. Artifact and stratigraphic evidence suggest that the uppermost pine log (Feature 6) and Zone 4 of this excavation were the result of the de Salas 1796 foundation repairs. While no artifact evidence exists to support or disprove the in-situ originality of the two lower wood support pieces, stratigraphic evidence suggests that this is the case. For more detailed descriptions and measurements, refer to Section 6.

8. New and Remaining Questions

The following are areas for which the excavations did not yield the expected results, or for which excavation data raised new and unsuspected questions.

1. Feature 7. The nature of the stone platform in the north-west corner of the lower floor room needs further investigation, and the hypothesis concerning its function offered in the previous section should be tested. Particularly, the east-west length of the feature, as well as its depth below the clay fill should be investigated.

2. The Fireplace. Trench B should be extended westward into the room to investigate the nature of the coquina ledges (Features 8 to 10), and to determine whether or not the mortar cap on the top of Feature 10 is indeed a floor equivalent to Floor 3 in Trench A. The hypothesis that the ledges represent hearth surfaces raised as the grade rose, should also be tested by removing the mortared coquina in the hearth itself.

3. The area adjacent to the north side of the lower floor room doorway should be tested, to determine the nature and number of steps

into the room at the various grade levels, and to cross check the grade and floor levels indicated in Trenches A and B.

It is recommended that a 1-meter wide trench, around the entire room perimeter be excavated and correlated with the data from the excavation reported in this paper.

Illustration G-14

Provenience Guide

Provenience	Elevation (MBD)	Photo #	Map #	FS#
Zone 1				
SE corner	1.25			
SW corner	1.24			
NW corner	1.25	2	no	no
NE corner	1.23			
Modern grade	T-1.24 B-1.26	3	3	1
Surface 1 (part of mod. grade)	T-1.26 B-1.37	3	3	no
Posthole 1	T-1.18 B-1.23	4	3	no
Posthole 2	T-1.29 B-less than 1 cm.	5	3	no
Posthole 3	T-1.28 B-less than 1 cm.	5	3	no
Area A	T-1.30 B-1.80	7,8	4	4
Area B	T-1.27 B-1.46	8	4	no
Area C	T-1.28 B-1.35	8	4	3
Area D	T-1.27 B-1.28	8	4	no
Feature 1	T-1.29 B-1.52	7,9	4,22	39
Feature 2	T-1.25 B-1.45	7,8,9,10	4	5
Area E	T-1.28 B-1.43	9	4	2
Area F	T-1.34 B-1.51	11	5,22	46
Mortar block	T-1.27 B-1.44	11	5	12
Area G	T-1.43 B-?	no	22	none
Area H	T-1.45 B-?	no	22	no
Area I	T-1.45 B-?	no	22	no
Posthole 5	T-1.45 B-1.55	no	22	no
Posthole 6	T-1.43 B-1.47	no	22	no
Posthole 7	T-1.44 B-1.54	no	22	no
Posthole 8	T-1.36 B-1.37	no	22	no
Posthole 9	T-1.40 B-1.41	no	22	no
Feature 7	T-1.50 B-2.32(?)	43	22	45
Floor 1	T-1.37 B-1.39	no	no	37
Zone 2	T-1.39 B-1.55	no	22	35,40*
Surface 3	T-1.55 B-1.65	44,45	no	36
Zone 3	T-1.65 B-1.80	no	no	33,41,51
Floor 2	T-1.80 B-2.05			44,42,51
Zone 4	T-1.85 B-2.05			52,53,54,55,56
Floor 3	T-2.05 B-2.32	51		57
OTLF fill	T-2.32 B-?	52	no	48

Illustration G-15

PROVENIENCE GUIDE, TRENCH A

Provenience	Elevation (MBD)	FS# (and associated FS#)	TPQ
modern grade	T-1.24		
	B-1.26	1	
Area C	T-1.28		
	B-1.80	4	
Feature 1	T-1.29		
	B-1.35	3	
Feature 2	T-1.25		
	B-1.45	5	
Area E	T-1.28		
	B-1.43	2	
Area F	T-1.34		
	B-1.57	46	
Mortar block	T-1.27		
	B-1.44	12	
Posthole 9	T-1.40		
	B-1.41	38	
Feature 7	T-1.50		
	B-2.32	45	
Zone 2	T-1.39		
	B-1.55	35, 40	
Floor 1	T-1.37		
	B-1.39	37	
Surface 3	T-1.55		
	B-1.65	36	
Zone 3	T-1.65		
	B-1.80	33, 41, 51	
Floor 2	T-1.80		
	B-1.85	42, 44, 51	
Zone 4	T-1.85		
	B-2.05	52, 53, 54, 55, 56	
Floor 3	T-2.05		
	B-2.32	57	
OTLF fill	T-2.32		
	B-?	48	

Illustration G-16

PROVENIENCE GUIDE, TRENCH B

SR=Stratigraphic record

Provenience	Elevation (MBD)	Photo #	Map #	FS#
Zone 1				
NE 1.18	1.18			
SE 1.20	1.20			
NW 1.19	1.19	1	no	no
SW 1.18	1.18			
Surface 1	T-1.20 B-1.26	no 54	no SR#8	17
Zone 2	T-1.26 B-1.35	no 54	no SR#8	25
Floor 1	T-1.35 B-1.37	30,54	no SR#8	19
Zone 3	T-1.37 B-1.50	54	SR#8	20
Floor 2 (former Area A)	T-1.50 B-1.55	54	SR#8	58
Area B (former Zone 4)	T-1.55 B-1.75	54	19,SR#8	50
Floor 3	T-1.75 B-1.85	54	SR#8	
Zone 4	T-1.85 B-2.05	54	SR#8	
Zone 5 (OTLF fill)	T-2.05 B-2.70	54	SR#8	
Posthole 4	T-1.54 B-less than 1cm.	35	14	no
Tabby block	T-1.45 B-1.54	35	14	26
Feature 8	T-1.50 B-1.78	50,54	SR#8	no
Feature 9	T-1.78 B-2.05	54	SR#8	no
Feature 10	T-2.10 B-?	54	SR#8	no
Feature 5	T-1.38 B-1.45	35,49	14	49

Illustration G-17
PROVENIENCE GUIDE, TRENCH C

Provenience	Elevation (MBD)	Photo #	Map #	FS#
Zone 1	T-1.20 B-1.30	no	no	no
Zone 2	T-1.30 B-1.33	no	no	30
Floor 1	T-1.33 B-1.35	no	no	29
Zone 3	T-1.35 B-1.37	no	no	31
Floor 2	T-1.37 B-1.42	no	no	29
Zone 4 (base of fireplace coquina flake)	T-1.42 B-1.56	53, also 1 photo with no pN in frame	no	no

Illustration G-13

PROVENIENCE GUIDE, TRENCH D

Provenience	Elevation	Photo #	Map #	FS#
Floor 1	T-.84 B-.94	22,24,25	15	8
Floor 2	T-.94 B-1.26	22,24,25	15	9
Floor 3	T-1.26 B-1.41	14,22,24,25	15	15
Layer 1	T-1.41 B-1.46	22,24,25	15	13
Layer 2	T-1.46 B-1.78	15,22,24,25	15	16
Layer 3	T-1.78 B-1.84	17,22,24,25	15	14
Layer 4	T-1.84 B-1.95	18,22,24,25	15	18

PROVENIENCE GUIDE, TRENCH E

Provenience	Elevation MED	Photo #	Map #	FS#
Area A	T-1.05 B-1.56	12	6	no
Area B	T-1.16 B-1.56	12	6	no
Area C	T-1.26 B-1.58	no	6	11
Area D	T-1.44 B-1.60	13,13	7,9	7
Area E	T-1.59 B-1.94	13	9	no
Area F	T-1.56 B-1.64	13	9	no
Zone 2 (Area G)	T-1.58 B-2.10	13,16	9	no
Area H	T-1.54 B-1.61	13	9	6
Area I	T-1.56 B-1.61	13	9	10
Area K	T-1.71 B-1.74	16,20	10	no
Feature 3	T-1.16 (E.end) B-1.63	26,27	16	no
Area L	T-1.94 B-2.33	19,21	SR#4,12,13	3
Area M	T-2.03	20	13,13	no
Feature 4	T-2.05 B-2.30	21	13	21
Zone 3	T-2.10 B-2.33	33,32		no
Area N	T-2.33 B-2.45	?	18	24
Zone 4	T-2.33 B-2.63	34		27
Area J	T-1.60 B-1.70		9	no
Feature 6	T-2.53 B-2.84	40	21	32
Area O	T-2.45 B-2.47	no	SR#4	22
Feature 6, ext.	T-2.84 B-2.95	41	21	32

ARCHITECTURAL SAMPLES

FS#	PROVENIENCE	SAMPLE DESCRIPTION
1	Trench A, Floor 1 Modern grade	Modern grade
2	Area E, Trench A	Rubble and Flake
3	Area C, Trench A	Coquina Rubble
4	Area A, Trench A	Coquina Rubble Tabby Fragments
5	Feature 2, Trench A	Tabby Fragments
6	Area H, Trench E	Tabby Fragments
7	Area D, Trench E	3 Brick Fragments with mortar Coquina fragment
8	Floor 1, Trench D	Concrete Floor fragments
9	Floor 2, Trench D	Concrete poured over coquina
10	Area I, Trench E	Coquina fragments
11	Area C, Trench E	Coquina fragments
12	Trench A, Tabby Block and mortar	Tabby fragment with mortar
13	Trench D, Layer 1	Gold coquina flakes
14	Trench D, Layer 3	Crushed coquina
15	Trench D, Floor 3	Tabby floor fragments
16	Trench D, Layer 2	Crushed coquina
17	Trench B, Surface 1	Concrete fragments
18	Trench D, Layer 4	Clay (Terreplein fill)
19	Trench B, Floor 1	Concrete fragments
20	Trench B, Zone 3	Coquina fragments Tabby fragments
21	Trench E, Feature 4	Coquina fragments One coquina block
22	Trench E, Area O	Coquina fragments
23	Trench E, Area L	Coquina fragments
24	Trench E, Area N	1 coquina block
25	Trench B, Zone 2	Rubble
26	Trench B, Tabby Block	Tabby Block
27	Trench E, Zone 4	None
28	Trench C, Floor 1	Floor sample
29	Trench C, Floor 2	Floor sample
30	Trench C, Zone 2	None
31	Trench C, Zone 3	Dirt and rubble
32	Trench E, Feature 6	2 logs
33	Trench A, Zone 3	Coquina fragments
34	Trench C, Zone 4	Dirt and oyster shell
35	Trench A, Surface 2	Tabby fragments and coquina
36	Trench A, Surface 3	Tabby fragments
37	Trench A, Floor 2	Floor sample
38	Trench A, Posthole 9	None
39	Trench A, Feature 1	None
40	Trench A, Zone 2	Gold coquina flakes
41	Trench A, Area 5	Crushed coquina

Illustration G-20

ARCHITECTURAL SAMPLES

FS#	PROVENIENCE	SAMPLE DESCRIPTION
42	Trench A, Area K	Tabby fragments Coquina flakes
43	Trench A, Area L	Tabby fragments
44	Trench A, Floor 3	Floor sample
45	Trench A, Feature 7	Plaster facing on Feature 7
46	Trench A, Area F	Clay
47	Trench B, NW of corner of in profile .60 below datum	1 brick with mortar
48	Trench A, OTLF fill	Clay
49	Trench B, FEature 5	Tabby floor fragments
50	Trench B, Area B	None
51	Trench A, Zone 4	Crushed coquina
52	Trench A, Floor 4	Floor sample
53	Trench A, Floor 5	Floor sample
54	Trench A, Zone 5	Crushed coquina
55	Trench A, Zone 6	None
56	Trench A, Floor 6	Floor sample
57	Trench A, Zone 7	Crushed coquina
58	Trench B, Floor 2	Floor sample

ARTIFACT CATALOGUE

FS#	PROVENIENCE	CONTENTS
23	Trench E, Area L Top: 1.11mmsl.	3 plain pearlware fragments 6 late polychrome pearlware (1 rim fragment, 3 base fragments) 2 sherds Annular ware 1 base fragment Annular ware 10 fragments green glass 1 fragment clear glass
27	Trench E, Zone 4 Top: .61mmsl.	2 fragments iron tubing 1 sherd grey salt glazed stoneware 4 sherds creamware 1 sherd slipware 3 sherds plain pearlware 1 kaolin pipestem 9 fragments iron 4 fragments green glass
30	Trench C, Zone 2 Top: 4.29mmsl.	1 fragment iron, 2 fragments clear glass
38	Postmold 9 Top: 4.22mmsl.	1 fragment plain pearlware (past 1785)
39	Trench A, Feature 1 Top: 4.33mmsl.	3 iron fragments 1 wire nail 1 fragment Rouen Faience 4 fragments aluminum tin foil
50	Trench B, Area B (Modern firepit)	1 green glass bottle neck 1 brass nail 5 iron fragments
55	Trench A, Zone 6 Top: 3.66mmsl.	1 iron fragment 1 fragment red brick tile

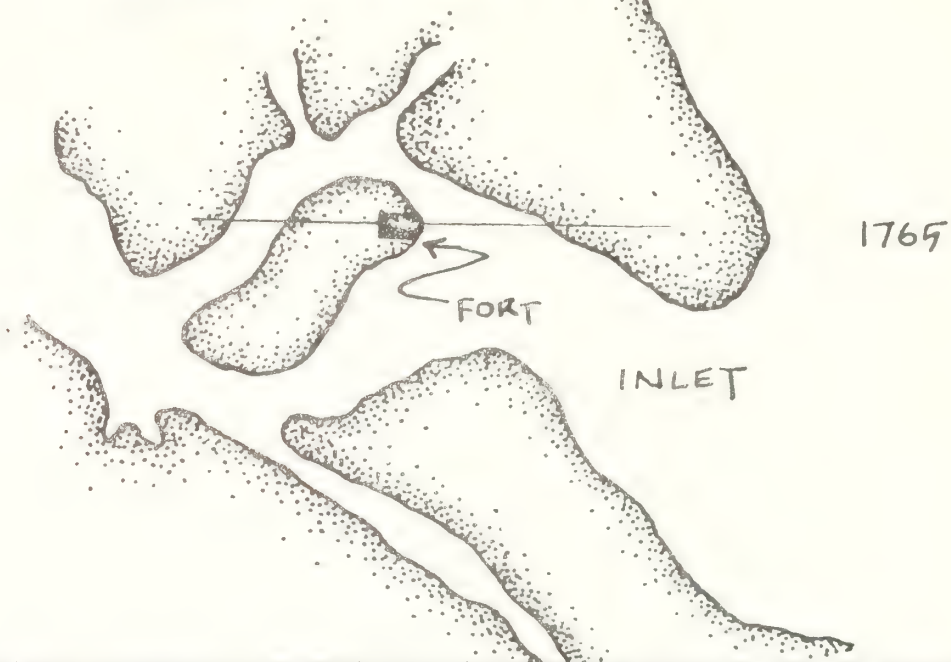
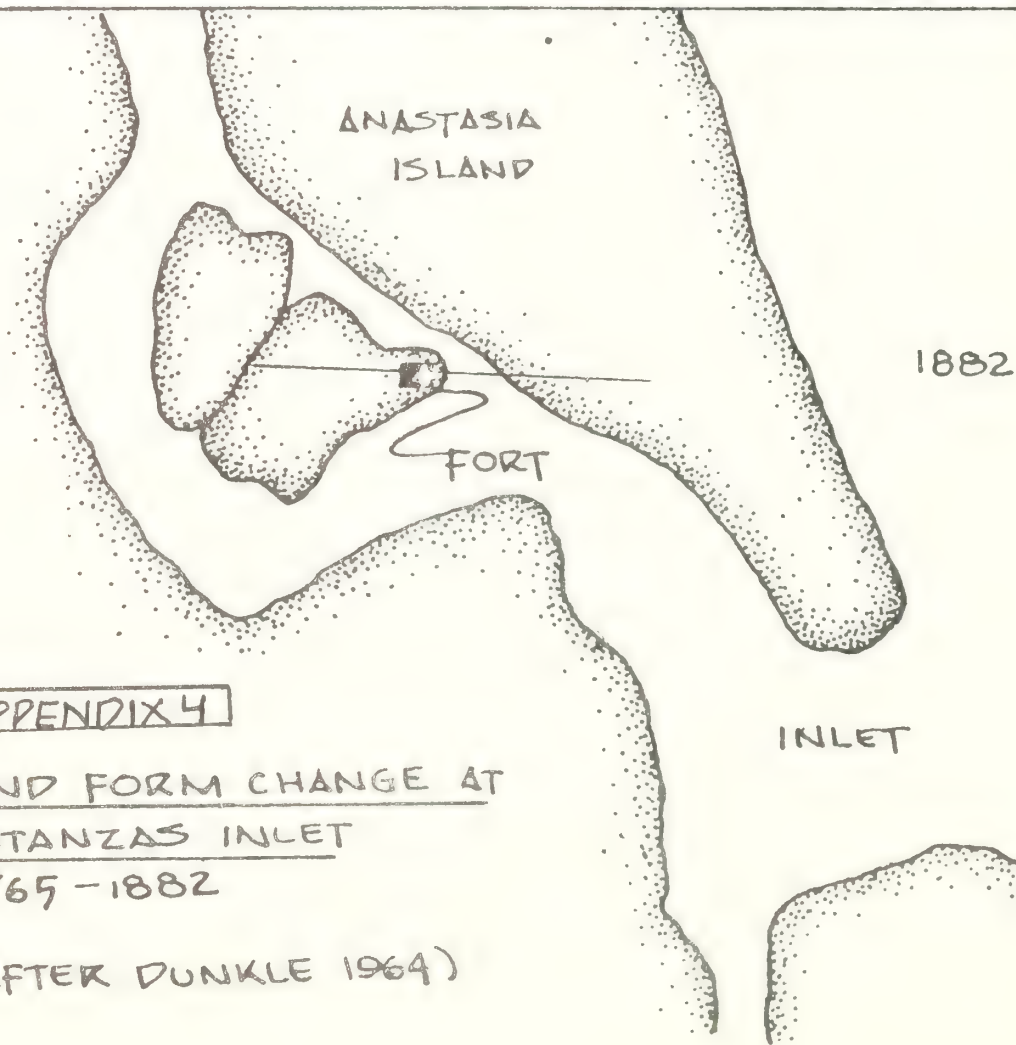
Illustration G-21

ARTIFACT CATALOGUE

(not including architectural samples)

FS#	PROVENIENCE	CONTENTS
5	Trench A, Feature 2 Top: 4.37mmsl.	10 fragments iron 1 clear glass frag 6 rat bones
4	Trench A, Area A Top: 4.32mmsl.	6 iron fragments (possibly nail fragments)
7	Trench E, Area D Top: -1.47mmsl.	23 iron flakes, rusted 2 iron container (canteen) fragments
10	Trench E, Area 1 Top: -.81mmsl.	2 rust fragments 4 fragments green glass 1 sherd brown salt glazed stoneware (past 1690)
19	Trench B, Floor 1 Top: 4.31mmsl.	2 fragments iron 1 fragment green glass 1 rat bone
20	Trench B, Zone 3 Top: 4.27mmsl.	1 .45 caliber brass cartridge 8 iron fragments
21	Trench E, Feature 4 Top: -.86mmsl.	1 red brick (whole, with mortar) 2 fragments red clay tile (sandwich brick: see Deagan 1976) 2 sherds plain pearlware 2 sherds late polychrome painted pearlware 2 sherds delftware bisque 1 sherd slipware 1 sherd green glazed Olive Jar 1 sherd marine ware (majolica) 1 S-hole bone button 11 fragments iron 16 fragments green glass Miscellaneous faunal material (rat, cow, catfish, mullet, pig)
22	Trench E, Area O Top: -.37 mmsl.	2 sherds creamware 1 sherd late polychrome pearlware 1 Queensware rim-Creamware 1 basal fragment - clear glass tumbler 6 fragments iron Miscellaneous faunal material
23	Trench E, Area L Top: -1.11mmsl.	3 fragments red clay tile 20 fragments iron 1 sherd Olive Jar 1 rim sherd - Slipware 1 rim sherd white salt glazed stoneware 1 sherd British Blue on white Porcelain 7 fragments Creamware: 3 Queensware rims 1 plain rim 3 plate base fragments

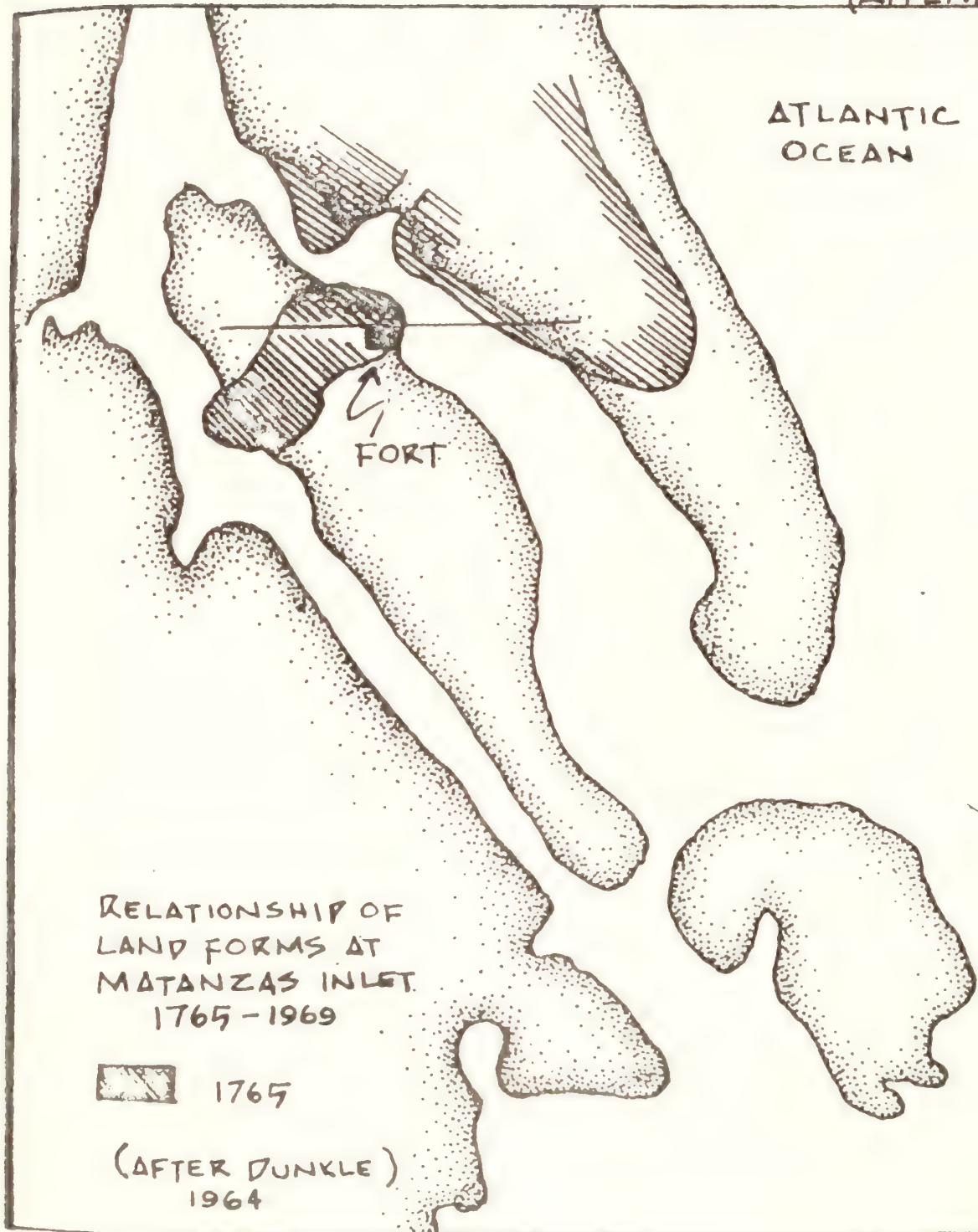
ANASTASIA ISLAND

ANASTASIA
ISLANDAPPENDIX 4LAND FORM CHANGE AT
MATANZAS INLET

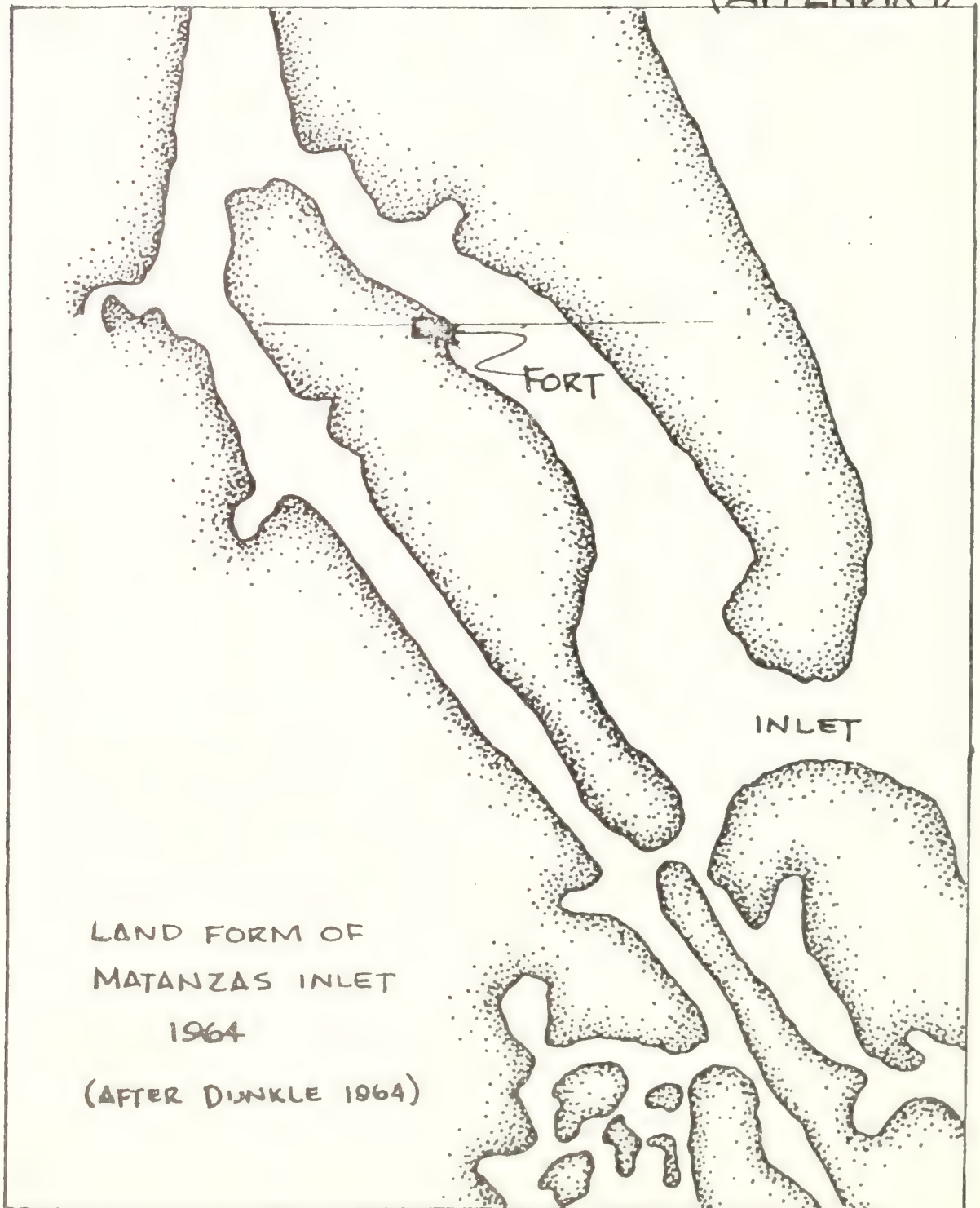
1765-1882

(AFTER DUNKLE 1964)

(APPENDIX 4)



(APPENDIX 4)



APPENDIX H

FOUNDATION INVESTIGATION - 1978

July 27, 1978

Memorandum

To; George Fischer, Southeast Archeological Center
Subject; Archeological inspection of Foundation investigation
at Ft. Matanzas

In compliance with the Foundation Investigation section of the July 12 Memorandum H30-DSC-TSE and to better understand the structural stability of the foundation of Ft. Matanzas, six investigation test were excavated around the perimeter of the fort. The excavation field methods and procedures were conducted by the architects while the archeologist watched over that no cultural context or artifacts, previously unreported, were altered or destroyed. Using an eighth-inch screen, the archeologist sifted any soil of possible cultural value.

The excavation tests, listed below, are all on the exterior of the fort wall. All depth measurements are taken from ground surface at the wall. (See Map)

Test #1

Location: Along the East wall, 14 ft. 5 in. from the East corner of the fort to the East side of the test.

Dimensions: 33 in. along the wall and 18 in. perpendicular to the wall. Maximum depth was 26 inches from ground surface.

Stratigraphy: Ground Surface

4 inches of grey-humic sand with grass roots
20 inches of white (sterile) sand - At 16 inches
several(3) fragments of charred wood were found,
no other associated artifacts.
2 inches of greyish-white sand - Probably the
result of water soakage.
Water Level at 26 inches below surface at wall.

Test #2

Location: At the very North corner of the fort

Dimensions: 15 inches perpendicular to East and North walls
, and 24 inches parallel to East and North wall.
(See Drawing) Maximum depth was 26 in. below surface.

Stratigraphy: Ground Surface
 5 inches of grey-humic sand
 21 inches of white (sterile) sand - One rusted wire nail found at the top of this strata. (FS#)
 Water Level at 26 inches below surface.

Test #3

Location: Along the North wall, 23 ft. 8 in. West of North corner of the fort to the north side of the test.

Dimensions: 34 inches along the North wall and 16 inches perpendicular to the wall. Maximum depth was 35 inches from ground surface.

Stratigraphy: Ground Surface
 4 inches of grey-humic sand
 14 inches of grey-brown sand with whole oyster shell = Some mortar and coquina fragments in this strata. Also found: 2 rusted wire nails, 3 sherds of white Ironstone, 2 fragments of green glass, 5 fragments of clear glass, 1 fragment of red brick, 2 bird bone fragments and 3 modern rodent bones. The documented evidence of oyster shell being placed around the fort, in 1924 and 1933, would be a reason for the twentieth Century context for this strata. (FS#2)
 15 inches of grey-brown sand
 Water Level not found.

Test #4

Location: Along the West wall, 14 ft. 6 in. west of the South corner of the fort to the South side of the test.

Dimensions: 28 inches along the West wall and 17 inches perpendicular to the wall. Maximum depth was 42 inches from ground surface.

Stratigraphy: Ground Surface
 1 inch of grey-humic sand
 13 inches of grey-brown sand with whole oyster shells
 8 inches of grey-brown sand
 20 inches of white (sterile) sand
 2 inches of grey-white sand - probably result of water soakage
 Water Level at 42 inches below surface
 no artifacts found in this test

Test #5

Location: At the very South corner of the fort

Dimensions: 17 inches perpendicular South and West walls,
64 inches parallel to the South wall and 30 inches
parallel to the West wall. Maximum depth was 33 in.
from ground surface.

Stratigraphy: Ground Surface
2 inches of grey-humic sand
18 inches of grey (sterile) sand
10 inches of white (sterile) sand
13 inches of grey-white (water soakage) sand
Water Level at 30 inches from ground surface
no artifacts found in this test

Test #6

Location: Along the South wall, 15 ft. East of the South
corner of the fort to the South side of the test.

Dimensions: .20 inches along the South wall and 20 inches per-
pendicular to the wall. Maximum depth was 28 in.
from ground surface.

Stratigraphy: Ground Surface
3 inches of grey-humic sand
25 inches of white (sterile) sand
Water Level at 28 inches below surface

No artifacts found in this test.

The archeologist found no cultural material, of previously unknown context, during the investigation. The material culture that was found, was of late deposit, probably early 20th century. It was noted that tests #4 and #5 had complete foundation stones missing. All test showed heavy erosion of mortar from between foundation stones. The water table variation, due to tides, was suggested by the architects as the cause of mortar deterioration.

Architects: Craig Frazier
Randy Copeland
Terry Wong

Archeologist: Jay Haviser

Date of Project: July 26-27, 1978

EAST
CORNER

SOUTH
CORNER

SOUTH WALL

TEST
#6

TEST
#5

TEST
#1

TEST
#4

EAST WALL

WEST WALL

TEST
#2

TEST
#3

NORTH WALL

NORTH
CORNER

WEST
CORNER

FORT
MATANZAS

FOUNDATION INVESTIGATION
TEST

(NO SCALE)

Illustration H-1

JAY B. HAVISER

Fort Matanzas Foundation Investigation Test Digs - Location Plan



Illustration H-2

Dig Number 4 - Along West Scarp

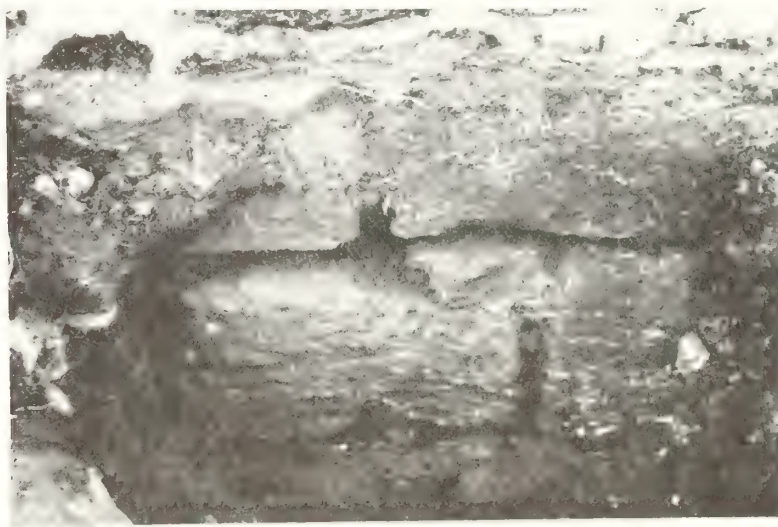


Illustration H-3

Test Dig at Northwest Corner



Illustration H-4

Dig Number 1 - Along East Scarp



Illustration H-5

Dig Number 3 - Along North Scarp

Appendix I

Material Problems in the Preservation of Fort Matanzas

by

James R. Clifton, Research Chemist
Building Composites Group, Structures and Materials Division
Center for Building Technology, NEL
United States Department of Commerce
National Bureau of Standards

MATERIAL PROBLEMS IN THE PRESERVATION OF FORT MATANZAS

by

James R. Clifton

1. INTRODUCTION

On July 19, 1978, I inspected the historic Spanish fortifications at Fort Matanzas National Monument and Castillo de San Marcos National Monument along with NPS personnel. These fortifications are located along the northeastern Florida coast. Both forts were constructed from coquina, which is a sedimentary shell limestone.

The purpose of my inspection was to (1) observe material problems being encountered in preserving the structures and (2) to identify factors causing the observed deterioration.

2. FORT MATANZAS

2.1 Background Information

Fort Matanzas is a small structure built in 1740-42 located on Rattlesnake Island in the Matanzas River, some 15 miles from St. Augustine, Florida. It rests on sandy soil through which ground water can easily migrate up into the coquina blocks. The height to which this moisture rises up the structure has not been determined. Further, the fort is subjected to sometimes brief but frequent rainstorms.

2.2 Observed Preservation Problems

The major problems identified during my inspection of the fort are given in the following:

(1) General weathering of the coquina and mortar. Some of the stone in the wall facing the river were weathered to such an extent that they should be replaced for reasons of durability.

(2) Steel plates, supports, and reinforcing rods which were placed in the structure during previous preservation efforts have badly corroded. In several places, corrosion of the steel is causing the coquina block to either fracture or to buckle.

(3) The existing drainage system allows rain to splash on the coquina faces of the fort contributing to its deterioration. A recently constructed wooden stairway causes rainwater to splash on the walls and also into a window opening.

(4) Holes have been dug into the coquina near entrances apparently by visitors.

(5) Steel tie rods connecting steel plates on opposing sides of the fort are too slack to serve their intended purpose.

(6) Apparently, some settling took place in the past as a vertical crack once ran down the middle of the face of the tower wall. It was repaired several years ago and has not redeveloped. It is unknown whether it will become active again.

2.3 Discussion and Recommendations

Neither the fort nor its components appear to this observer to have had any obvious structural deficiencies. However, the steel supports, reinforcement, and tie rods should be removed in the near future to prevent further deterioration of the coquina by corrosion of the steel. Other non-corroding materials or means should be found for reinforcing the structural elements.

The drainage system should be improved so that rainwater does not splash on the walls and pond on horizontal surfaces. For the same reason, the stairway also should be modified.

Deteriorated coquina should be replaced with new coquina having properties close to those of the original stone. If the original stone was replaced with a more durable or stronger stone, the deterioration of adjacent stone would probably be accelerated. If feasible, the vertical profile should be made more smooth by replacing deteriorated coquina and repointing; also the merits of cutting off parts of stone projecting beyond the vertical wall plane should be considered. These steps will be required to some extent if the fort walls are replastered.

Repointing of the mortar should be performed using a lime-sand mortar of the same proportions as the original mortar. A similar mortar could be used to fill holes dug into the coquina by visitors.

The U. S. National Park Service should investigate the possible foundation problems which were discussed during the inspection and determine if the previously mentioned crack will cause any future problems.

3. WEATHERING OF COQUINA

Little information appears available on the properties of coquina and on the main processes responsible for the weathering of coquina. Several processes can be proposed to account for the deterioration of coquina such as leaching of its cementitious material by rainwater or the disruption of the structure of coquina by crystallization within it of soluble salts. However, more should be known concerning the main factors responsible for the weathering of coquina before a preservation approach is developed.

Information which should be obtained includes:

- (1) Chemical composition, microstructure, mineralogy, porosity, and water absorption of coquina.
- (2) Compressive strength of coquina at a wide range of moisture contents.
- (3) Comparisons between the microstructure of fresh coquina, weathered coquina, and coquina immersed in salt water. In addition, the amounts and types of soluble salts in them should be determined.
- (4) Composition of the patina which has developed slowly on the coquina as a result of its exposures to the weather.

The above study will give some information on the properties of coquina. Further work may be necessary to definitely determine the process responsible for the weathering of coquina.

4. STABILIZATION OF COQUINA

The possibilities of stabilizing coquina by the application of preservatives or stone consolidation materials was discussed during the inspection. Some experimental work has been carried by the NPS in attempting to stabilize stone and plaster with the Ba(OH)_2 method developed by S. Z. Lewin. It was found that the solution in which Ba(OH)_2 is dissolved is attacked by micro-organisms resulting in a dark discoloration of treated plaster. In addition, the long-term effectiveness of the Ba(OH)_2 method has not been determined.

I attended an international symposium on stone conservation held in Paris, France in June 1978. Over 15 papers were given on studies of stone preservatives and consolidating materials. The prevailing opinion expressed at the symposium was very much against the use of stone preservatives. Stone consolidating materials are being extensively studied in laboratories in Europe, but not on historic structures. The most promising materials appear to be silanes, epoxies and acrylates. Of these materials, silanes are claimed to have the greatest depth of penetration, the least effect on the appearance of stone and the greatest durability. However, silanes are very expensive and it will require many years before their long-term performance can be determined.

The project on stone consolidating materials being carried out at the National Bureau of Standards was discussed during the inspection. The purpose and work plan of this project are given in attached notes. At the present time, we plan to use a limestone and a sandstone as stone test substrates. If additional funding becomes available, coquina could be

included in this study. The author is preparing a literature review on stone consolidating materials, which will be completed within the near future.

It is my opinion that the stabilizing of coquina structures with consolidating materials should not be attempted until (1) the properties of coquina are characterized, (2) the processes responsible for the weathering of coquina are determined, and (3) the effectiveness of the materials in consolidating coquina is experimentally ascertained.

NOTES

NBS Stone Consolidating Project

1. Objectives of Project

The objectives of this project are (1) to evaluate the effectiveness of materials used to consolidate deteriorated stone of historic structures; and (2) to develop performance criteria to form the basis for the selection of effective stone consolidating materials.

2. Background

Building stone once removed from the quarry is subjected to natural weathering processes which gradually lead to its deterioration. However, the rate of degradation of building stone in urban areas has increased during the past century because of the effects of industrial air pollutants such as SO₂ and CO₂ gases, and acidic rainfall. In addition, certain types of building stones are less durable than others. For example, many of the sandstones in historic structures located in the urban areas of the United States show signs of significant weathering. Whereas, in the same regions, high quality granites may have weathered only slightly. Certain types of limestone and marble are also weathering at significant rates.

If the stone of historic structures is not so severely weathered that replacement is necessary, attempts may be made to consolidate it with various polymer systems. In addition to consolidating the stone, these materials are intended to retard further weathering.

Various types of consolidating materials have been used for many decades in Europe with varying degrees of success. In most cases, the evaluation of consolidating materials has been performed by using them on actual structures documented. Therefore, an adequate technical basis for selecting stone consolidating materials has not been developed. This project is aimed at providing information on the effectiveness of stone consolidating materials, and on the factors affecting their performance. Performance criteria which will assist the NPS in selecting consolidating materials will also be developed.

3. Approach and Work Plan

The performance of stone consolidating materials will be determined through a critical review of the use of stone consolidating materials, and by a laboratory evaluation of selected materials. Based on the results of this investigation, performance criteria for selecting stone consolidating materials will be developed.

3.1 Stone Test Substrates

The building stones selected for testing the effectiveness of consolidating materials will be representative of the types found on historic structures which are exhibiting signs of serious weathering. One sandstone and one limestone will be selected in consultation with NPS.

3.2 Selection of Stone Consolidating Materials

U. S. and foreign companies have been requested to submit information materials which they believe should be effective in consolidating materials.

In addition, federal organizations such as NASA, DOD AND DOT have been contacted because of the possibility that they have developed esotheric materials which could be useful in consolidating stone. The most promising materials are being selected for laboratory evaluation.

The factors which are being considered in selecting materials for testing include (1) record of successful performance, (2) chemical composition and physical properties, (3) toxicity levels, (4) application and curing requirements, and (5) present or future availability in the U.S. Materials which are used solely for waterproofing purposes are not being evaluated in this study.

3.3 Evaluation of Consolidating Materials

Consolidating materials will be applied to stone test specimens and cured, whenever possible, by following the manufacturer's recommendations. Curing time, depth of penetration, and the effect of the materials on the appearance of the stone specimens will be determined. The consolidating value of the materials will be determined by measuring their effects on the mechanical and physical properties of the stone, such as:

- (1) compressive and tensile strengths
- (2) abrasion resistance
- (3) hardness
- (4) water absorption.

The response of deteriorated stone specimens treated with consolidating materials to weathering and other degrading processes will be ascertained by exposing them to:

- (1) SO_2 and CO_2 gases in moist atmospheres
- (2) crystallization and rehydration of soluble salts
- (3) thermal shock
- (4) freeze-thawing conditions
- (5) moisture
- (6) UV radiation.

APPENDIX J

ENGINEERING ANALYSIS OF
OBSERVATION TOWER VAULT

by

Terry Wong
Structural Engineer

Southeast/Southwest Team
Denver Service Center
National Park Service

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SHEET 1 OF 7

MADE BY T. Walig

CHECKED BY CRE
(INITIAL AND DATE)

GPO 841-849 2/14/79

COMPUTATION SHEET

Subject: FT. MATANZAS - ARCH SUPPORT STABILITY:

DESIGN DATA: 3-HINGED ARCH - NEGLECT RESTRAINT FROM NORTH & SOUTH WALLS.

LOADS:

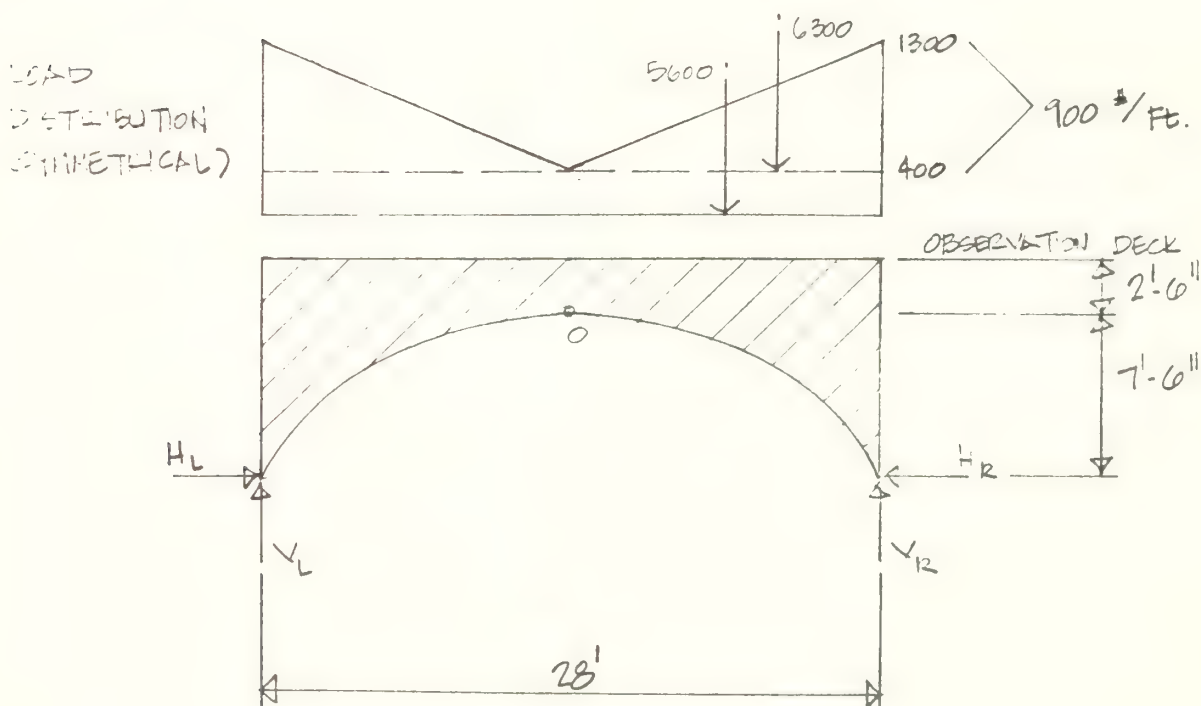
DEAD LOAD

SAND & COQUINA FILL - 120 PCF

COQUINA - 120 PCF

LIVE LOAD

- 100 PLF



UNIFORM LOAD (PER FOOT OF WIDTH): $2.5(120) + 100 = 400 \text{ \# / Ft.}$

TRIANGULAR LOAD (") : $7.5 (120) = 900 \text{ \#/ft.}$
(CONSERVATIVE) 483

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

SHEET 2 OF 7MADE BY T. WONGCHECKED BY CRE
(INITIAL AND DATE)

GPO: 84-1-846

Subject: FT. MATANZAS ARCH - CONT.

REACTIONS:

$$V_L = V_R = 400(14) + \frac{1}{2}(14)(900) = 5600 + 6300 = 11,900 \text{ lb.}$$

$$= \underline{11.9 \text{ K/ft.} \uparrow}$$

$$\Sigma M_o = 0; \quad H_L = H_R = H \quad \left(\frac{1}{2} \text{ OF ARCH}\right)$$

$$H = \frac{11.9(14) - 5.6(7) - 6.3(9.33)}{7.5} = \underline{9.15 \text{ K/ft.} \rightarrow}$$

(HORIZONTAL THRUST)

$$\text{TOTAL THRUST (EACH END)} = 9.15 \times 12 = 109.8 \text{ K} \rightarrow$$

DETERMINE ARCH SUPPORT STABILITY:
(2 CONDITIONS)

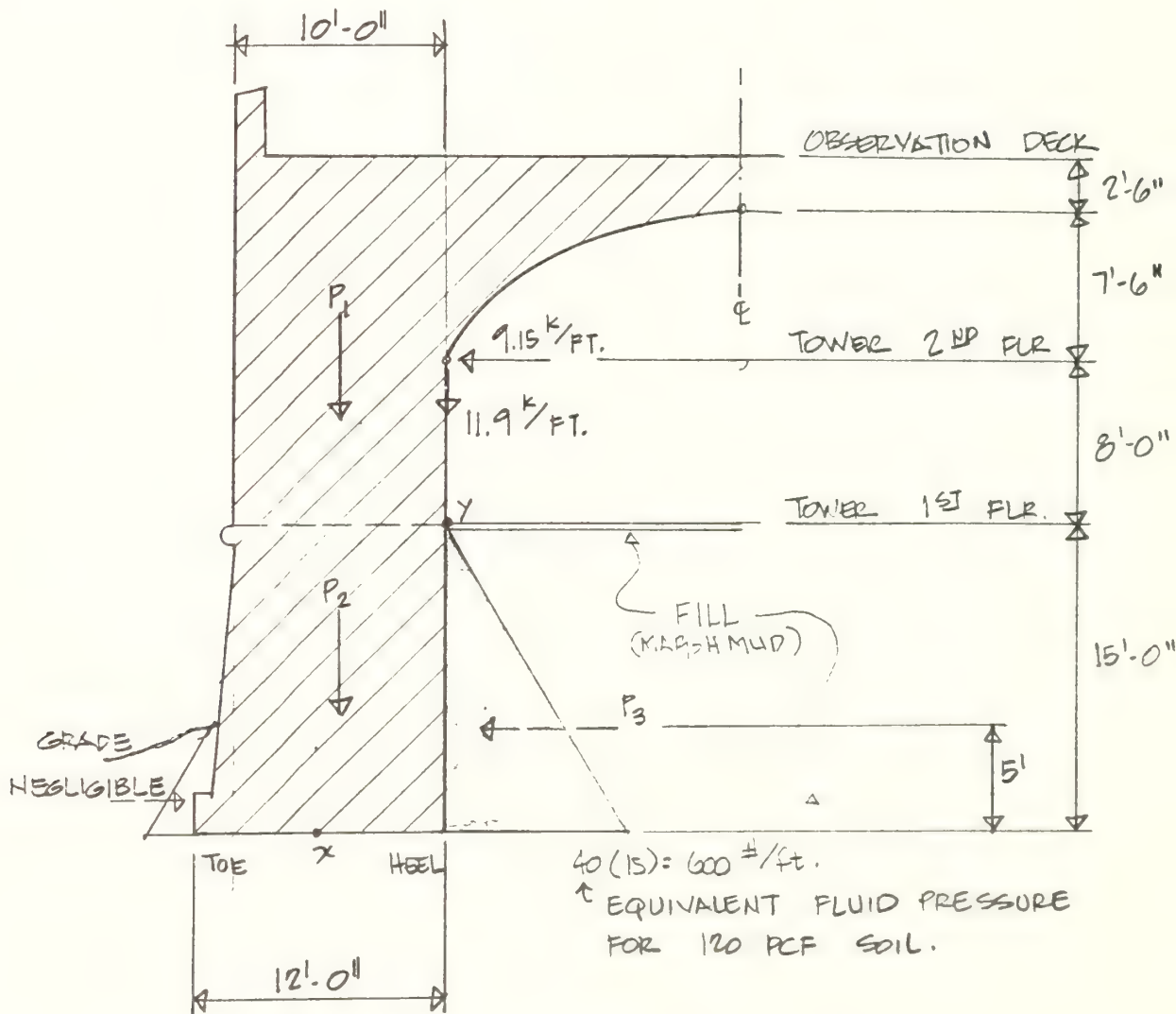
1. CHECK BUTTRESS SUPPORT OF MASONRY PIER.
2. CHECK SOIL SUPPORT AT BOTTOM OF PIER.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

SHEET 3 OF 7
MADE BY T. WONG
CHECKED BY CRE
(INITIAL AND DATE)
GPO 841-849

Subject: FT. MATANZAS ARCH - CONT.:



$$P_1 = 18' \times 10' \times 1' \times .120 \text{ kSF} + 10' \times .100 \text{ kSF} = 226 \text{ k/ft.}$$

$$P_2 = 15' \times 11' \times 1' \times .120 \text{ kSF} = 19.8 \text{ k/ft.}$$

$$P_3 = \frac{1}{2} (.6)(15) = 4.5 \text{ k/ft.}$$

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

SHEET 4 OF 7
MADE BY T. WONG
CHECKED BY CRE
(INITIAL AND DATE)
GEO. 84 - 849

Subject: FT. MATANZAS ARCH - CONT.:

1. CHECK BUTTRESS SUPPORT STABILITY:

(ASSUME THAT ONLY THE MASONRY PIER ABOVE THE TOWER
1ST FLOOR LEVEL RESISTS THE HORIZONTAL THRUST OF
THE ARCH.)

$$\Sigma M_y = 0; \text{ SEE SHEET 3.}$$

$$\text{REQ'D } P_1 = \frac{9.15(8)}{5} = 14.64 \text{ K/FT.}$$

$$\text{ACTUAL } P_1 = \underset{\text{(WITHOUT L.L.)}}{18'} \times \underset{\text{W}}{10'} \times \underset{\text{THK}}{1'} \times .120 \text{ KSF} = 21.6 \text{ K/FT}$$

FACTOR OF SAFETY:

$$F.S. = \frac{21.6}{14.64} = 1.47 \quad (\text{O.K.})$$

THERE IS AN ADEQUATE FACTOR OF SAFETY FOR
THE STABILITY OF THE BUTTRESS SUPPORT.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

SHEET 5 OF 7
MADE BY T. WANG
CHECKED BY CRE
(INITIAL AND DATE)
GPO 841-849

Subject: FT. MATANZAS ARCH - CONT. :

2. CHECK SOIL SUPPORT (OVERTURNING) STABILITY :

$$\text{BASE PRESSURE: } q = \frac{P}{A} \pm \frac{M}{S}$$

$$P = \sum F_v = 11.9 + 22.6 + 19.8 = 54.3 \text{ K/FT.}$$

$$A = 12 \times 1 = 12 \text{ FT.}^2$$

$$\sum \bar{M}_x ; \quad \begin{matrix} \curvearrowright \\ \text{(SEE SHEET 3)} \end{matrix} -22.6(1') - 19.8(0.5') - 11.9(6') + 9.15(23') + 4.5(5') = M$$

$$M = -22.6 - 9.9 - 71.4 + 210.5 + 22.5 = 129.1 \text{ K-FT/FT.}$$

$$S = \frac{bd^2}{6} = \frac{(1)(12^2)}{6} = 24 \text{ FT.}^3$$

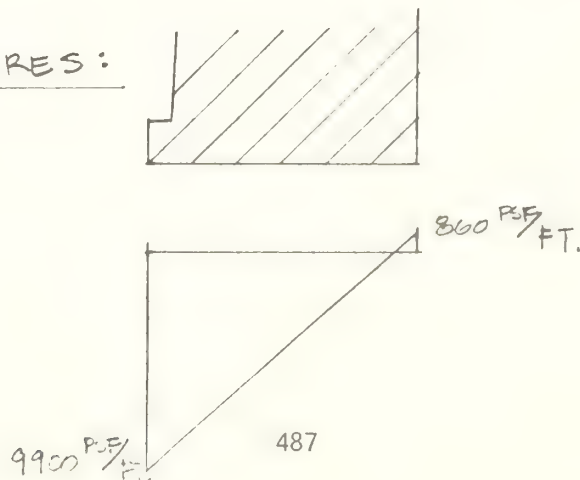
a. TOE PRESSURE - q_{\max}

$$q_{\max} = \frac{54.3}{12} + \frac{129.1}{24} = 4.52 + 5.38 = 9.90 \text{ KSF/FT. C}$$

b. HEEL PRESSURE - q_{\min}

$$q_{\min} = \frac{54.3}{12} - \frac{129.1}{24} = 4.52 - 5.38 = -0.86 \text{ KSF/FT. T}$$

BASE PRESSURES:



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

SHEET 6 OF 7
MADE BY T. WONG
CHECKED BY CPE
(INITIAL AND DATE)
GPO 841-849

Subject: FT. MATANZAS ARCH - CONT. :

2. SOIL SUPPORT STABILITY - CONT.:

THE ALLOWABLE SOIL PRESSURE FOR SAND IN THIS AREA RANGES FROM 2000 TO 8000 PSF. (AASHTO 1913 AND UBC 1976). BASED ON THE SOILS REPORT ON THE SHORELINE, THE ALLOWABLE BEARING PRESSURE FOR THIS SITE WILL FALL IN THE LOWER PORTION OF THE RANGE.

SINCE THE BASE PRESSURE AT THE TOE IS ALREADY GREATER THAN THE MAXIMUM ALLOWABLE (9.8 KSF VS. 8.0 KSF) SOME LOAD MUST BE REMOVED FROM THE MASONRY PIER.

BECAUSE THE GRAVITY LOAD OF THE PIER CANNOT BE REDUCED, THE ONLY ALTERNATIVE IS TO REDUCE OR ELIMINATE THE HORIZONTAL THRUST OF THE ARCH.

THIS IS IN THEORY WHAT IS ACCOMPLISHED BY THE EXISTING TIE RODS. BECAUSE OF THE DETERIORATED CONDITION OF THE TIE RODS, IT IS IMPORTANT THAT THESE BE REPLACED.

BY ELIMINATING THE ARCH THRUST, THE TRIANGULAR BASE PRESSURE BECOMES RECTANGULAR AT A STRESS OF 4.52 KSF. THIS IS WITHIN THE ALLOWABLE RANGE OF SOIL BEARING PRESSURE, ALTHOUGH THERE IS A MINIMAL FACTOR OF SAFETY.

(NOTE: INVESTIGATION INDICATES THAT SOME TYPE OF WOODEN CHIBBAGE AND/OR PILING EXISTS BENEATH THE PORT. IF THIS SYSTEM IS STILL IN GOOD CONDITION IT MAY SUPPORT THE TOWER BY ITSELF, HOWEVER REPLACEMENT OF THE TIE RODS WILL PROVIDE A FACTOR OF SAFETY₄₈₈ RECOMMENDED FOR THIS STRUCTURE.)

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

SHEET 7 OF 7MADE BY T. WONGCHECKED BY CRÉ
(INITIAL AND DATE)

GPO 841-849

Subject: FT. MATANZAS ARCH - CONT.:

DESIGN TIE RODS TO RESIST THE TOTAL HORIZONTAL THRUST OF THE ARCH.

$$\text{TOTAL THRUST} - H = 11' (9.15 \text{ k/ft.}) = 100.6 \text{ K}$$

$$4 \text{ TIE RODS} - \frac{100.6}{4} = 25.2 \text{ K EACH.}$$

FOR A36 STEEL;

$$F_t = .6 (36) = 22 \text{ KSI}; \quad A_{\text{REQ'D}} = \frac{25.2}{22} = 1.14 \text{ in}^2$$

$$\text{REQ'D DIA.} = \sqrt{\frac{4(1.14)}{\pi}} = 1.21 \text{ in}$$

USE 4-1 1/4" ϕ RODS

(NOTE: A SMALLER SIZE ROD MAY BE USED IF A HIGHER STRENGTH STEEL IS USED.)

A LESS OBTRUSIVE STRUCTURAL SYSTEM IS FEASIBLE HOWEVER IT WOULD BE MORE COSTLY THAN REPLACING THE PRESENT TIE RODS.

BIBLIOGRAPHY

BIBLIOGRAPHY

First Spanish Period

Unpublished Sources

1. Gov. Manuel de Cendoya to the crown, March 24, 1672, Stetson Collection (University of Florida), Archivo General de Indias 58-1-26/16A.
2. "Testimonios," Sept. 7, 1672, SC, AGI 58-1-26/17.
3. Royal officials to the crown, April 16, 1683, North Carolina Spanish Records Collection (Department of Archives and History), AGI 54-5-1/4/154.
4. Ex-gov. Pablo de Hita Salazar to the crown, May 24, 1683, NC, AGI 54-5-11/99.
5. Gov. Pedro de Aranda Y Avellaneda to the crown, April 28, 1687, SC, AGI 54-5-14/41.
6. Gov. Francisco de Córcoles y Martínez to the crown, Jan 23, 1716, NC, AGI 58-1-30/49.
7. Gov. Juan Francisco de Güemes y Horcasitas of Cuba to Secretary of State for the Indies Marquess de Torrenueva, April 8, 1738, SC, AGI 87-1-3/34.
8. Gov. Manuel de Montiano to Torrenueva, May 28, 1738, SC, AGI 86-5-25/4.
9. Montiano to Güemes, June 2, 1738, East Florida Papers (Library of Congress), Bundle 37, Document No. 43.
10. Montiano to Torrenueva, June 12, 1738, SC, AGI 87-1-3/51.
11. Montiano to Güemes, June 17, 1738, EFP, 37/57.
12. Montiano to Güemes, July 21, 1738, EFP, 37/68.
13. Montiano to Güemes, Oct. 26, 1738, EFP, 37/91.
14. Montiano to Güemes, Oct. 29, 1738, EFP, 37/103.

15. Montiano to Güemes, Jan. 4, 1739, EFP, 37/115.
16. Montiano to Güemes, April 7, 1739, EFP, 37/145.
17. Montiano to Güemes, Aug. 16, 1739, EFP, 37/154.
18. Montiano to Güemes, Oct. 24, 1739, EFP, 37/173.
19. Montiano to Güemes, Mar. 25, 1740, EFP, 37/192.
20. Montiano to Güemes, May 15, 1740, EFP, 37/200.
21. Montiano to Güemes, May 20, 1740, EFP, 37/209.
22. Montiano to Güemes, June 11, 1740, EFP, 37/201.
23. Montiano to Güemes, June 24, 1740, EFP, 37/202.
24. Montiano to Güemes, July 28, 1740, EFP, 37/205.
25. Engineer Pedro Ruíz de Olano to the crown, Aug. 8, 1740, SC, AGI 87-1-2/114.
26. Montiano to the crown, Aug. 9, 1740, SC, AGI 87-3-12/22.
27. Montiano to Güemes, Aug. 12, 1740, EFP, 37/211.
28. The Inhabitants of Florida to the crown, Sept. 15, 1741, NC, AGI 58-1-36/40.
29. Ruíz to the crown, March 20, 1743, SC, AGI 87-1-2/115/35. This communication has been erroneously attributed to Engineer Antonio de Arredondo.
30. Montiano to Secretary of State for the Indies José del Campillo, March 20, 1743, SC, AGI 87-3-12/51. This document was used originally directly from the Brooks Transcripts, where it bore no addressee or archival number.
31. Montiano and Treasurer Juan Esteban de Peña to Viceroy Count Fuenclara of Nueva Espana, March 26, 1743, NC, AGI 58-1-32/37.
32. Montiano to Secretary of State for the Indies Marquess de la Ensenada, Jan. 21, 1745, SC, AGI 87-3-12/70.
33. Montiano to De la Ensenada, Jan. 15, 1746, SC, AGI 87-3-12/76.
34. Montiano to De la Ensenada, Jan. 24, 1747, SC, AGI 87-3-12/83.
35. Montiano to De la Ensenada, July 20, 1748, SC, AGI 87-3-13/2.

36. Ruíz to the crown, late 1748 or early 1749, SC, AGI 86-6-6/1.
37. Royal officials to De la Ensenada, March 16, 1749, SC, AGI 86-1-14/2.
38. Accountant José Antonio Gelabert of the Tribunal of Accounts of Cuba and the Leeward Islands to the crown, Jan. 10-14, 1752, SC, AGI 87-1-14/2.
39. Parish Pastor Juan José Solana to the Bishop of Cuba, April 22, 1759, in Solana to Secretary of State for the Indies Julian de Arriaga, April 9, 1760, SC, AGI 86-7-21/41.
40. Gov. Lucas de Palacio to Arriaga, May 14, 1759, SC, AGI 87-1-14/3.
41. "Report of Lt. Col. James Robertson to Maj. Gen. Thomas Gage, March 8, 1764," Public Record Office, Colonial Office 5/83, in Ricardo Torres Reyes, "British Garrison of St. Augustine 1763-1784" (Denver: National Park Service, 1972).
42. Gov. James Grant to the Lords of Trade, March 1, 1765, PRO, CO 5/540.
43. "Ataque de San Agustín de la Florida," March 13, 1779, EFP, 176/52.
44. "Estado en que se hallaba la Plaza de San Agustín de la Florida el 29 de octubre de 1780," EFP, 176/50.
45. "Aditamento al Plan de Ataque del Castillo de San Agustín de la Florida," Jan. 12, 1781, EFP, 176/49.
46. Albert C. Manucy, "Completion Report, Matanzas Scale Model," (St. Augustine: Southeastern National Monuments, March 28, 1951).

Published Sources

1. José Almirante, Diccionario militar (Madrid: 1869).
2. Evangeline Walker Andrews and Charles McLean Andrews (eds.), Jonathan Dickinson's Journal Or, God's Protecting Evidence (New Haven: 1945).
3. Anonymous, "Part of Florida" with inset reading "A Draught of Matanzas Inlet as taken by Lieut. Todiman of the Phoenix who was sent with the Pilots of the Men of War on purpose to sound the same," 1743?, Archer B. Hulbert (ed.), The Crown Collection of Photographs of American Maps, Series II (Cleveland: 1915), plate 30.

4. Luis R. Arana, "Pirates March on St. Augustine, 1683," El Escribano, April 1972.
5. Charles W. Arnade, The Siege of St. Augustine in 1702 (Gainesville: 1959).
6. Antonio de Arredondo, "Plan de la Cinudad de San Agustín de la Florida y sus Contornos," May 15, 1737, Verne E. Chatelain, The Defenses of Spanish Florida 1565 to 1763 (Washington: 1941), map 10.
7. Bernard Forest de Belidor, La Science des Ingenieurs (Paris: 1729).
8. Herbert E. Bolton (ed.), Arredondo's Historical Proof of Spain's Title to Georgia (Berkeley: 1925).
9. A. D. Candler (ed.), Colonial Records of the State of Georgia, 26 vols. plus 13 unpublished typescript volumes (Atlanta: 1904-1916).
10. Cartografía de ultramar, 4 vols. (Madrid: 1949-1957).
11. Pablo Castelló, "Plano del Presidio de San Agustín de la Florida y sus Contornos," July 21, 1763, Chatelain, The Defenses, map 13.
12. Verner W. Crane, The Southern Frontier 1670-1732 (Ann Arbor: 1929, 1956).
13. P. Harrison and M. Sarrazin, "A Plan of the Harbour of St. Augustine and the adjacent Parts in Florida, representing the Field of Action with the Disposition of the Forces before that Castle in the Expedition under General Oglethorpe in 1740," The Report of the Committee of Both Houses of Assembly Of the Province of South-Carolina, Appointed To enquire into the Causes of the Dissapointment (sic) of Success, in the late Expedition against St. Augustine, Under the Command of General Oglethrope (Charles-Town: 1742).
14. Edward Kimber, A Relation or Journal of a Late Expedition to the Gates of St. Augustine on Florida. Reprinted from the original edition, London, 1744 (Boston: 1935).
15. John Tate Lanning, The Diplomatic History of Georgia--A Study of the Epoch of Jenkins Ear (Chapel Hill: 1936).
16. Woodbury Lowery, A Descriptive List of Maps of the Spanish Possessions Within the Present Limits of the United States, 1502-1820. Edited with notes by Philip Lee Phillips (Washington: 1912).

17. -----, The Spanish Settlements Within the Present Limits of the United States, 1513-1574, 2 vols. (New York: 1905, 1959).
18. Newton D. Mereness, Travels in the American Colonies (New York: 1916).
19. James Moncrief, "A Plan of the Fort and Harbour of Matanzas, Distant from St. Augustine Five Leagues, 1765," Hulbert, Crown Collection, Series III, plates 59 and 60.
20. Manuel Pérez-Beato (ed.), Archivo de Indias -- Ingenieros cubanos, Siglos xvi, xvii y xviii -- Noticias historicas extractadas por el Capitan de ingenieros Don Benito Leon y Canales (Habana: 1941).
21. Robert R. Rea, "Lieutenant Colonel James Robertson's Mission to the Floridas," Florida Historical Quarterly, July 1974.
22. Bernard Romans, A Concise Natural History of East and West Florida (New York: 1775; Gainesville: 1962).
23. Mariano Rubio y Bellvé, Diccionardio de ciencias militares, 3 vols. (Barcelona: 1895-1903).
24. Eugenio Ruídz y Caravia, La Florida: su conquista y colonización per Pedro Menéndez de Aviles, 2 vols. (Madrid: 1893).
25. John J. TePaske, The Governorship of Florida 1700-1763 (Chapel Hill: 1964).
26. The St. Augustine Expedition of 1740 -- A Report to the South Carolina General Assembly, with an introduction by John Tate Lanning (Columbia: 1954).
27. Juan Manuel Zapatero, Historia de las fortificaciones de Puerto Cabello (Caracas: 1977).

SELECTED BIBLIOGRAPHY

British Period

Primary Sources

- Ann Arbor. University of Michigan. William L. Clements Library.
James Moncrief's Letterbook, 1780-82.
- Ann Arbor. University of Michigan. William L. Clements Library.
General Jeffrey Amherst Papers.
- Ann Arbor. University of Michigan. William L. Clements Library.
General Thomas Gage Papers. American Series.
- Ann Arbor. University of Michigan. William L. Clements Library.
General Thomas Gage Papers. English Series.
- Great Britain. British Library. London, Add. Mss 21661-21892.
Microfilm. P. L. Yonge Library. Sir Frederick Haldimand Papers.
Gainesville, Florida.
- Great Britain. Public Record Office. Colonial Office Papers. London.
Class 5, 273-275, 540-571, Add. MSS 21631-21881. transcripts and
microfilm. Library of Congress. Washington, D. C.
- Washington, D. C. National Archives. United States Continental Congress.
Papers of the Continental Congress, 1774-89. microfilm.

Secondary Sources

- Alvord, Clarence W. and Carter, Clarence E. (eds.). "The Critical
Period, 1763-1765. "Collections of the Illinois State Historical
Library 10 (1915):5-11.
- Bolton, Herbert E., and Marshall, Thomas. The Colonization of North
America, 1492-1783. New York: The MacMillian Company, 1920.
- Carter, Clarence E. "Notes on the Lord Gage Collection of Manu-
scripts." Mississippi Valley Historical Review XV (1929): 511-19.
- Carter, Clarence E. (ed.). The Correspondence of General Thomas Gage
with the Secretary of State and with the War Office and the
Treasury, 1763-1775. 2 vols. New Haven: Yale University Press, 1931,
1933.
- Chatelain, Verne E. The Defenses of Spanish Florida, 1565-1763.
Washington, D. C.: Carnegie Institution of Washington, 1941.
- Corse, Carita Doggett. "DeBrahm's Report on East Florida, 1773."
Florida Historical Quarterly 17 (1939):219-226.

- Davies, Kent Gordon. Documents of the American Revolution, 1770-1783. 2 vols. Dublin: Irish University Press, 1973.
- Forbes, James Grant. Sketches, Historical and Topographical of the Floridas: More Particularly of East Florida. 1829. Reprint. Gainesville: University of Florida Press, 1964.
- Gold, Robert L. Borderland Empires in Transition: The Triple-Nation Transfer of Florida. London: Southern Illinois University Press, 1959.
- Lockey, Joseph B. East Florida 1783-1785: A File of Documents Assembled and Many of Them Translated. Berkley: University of California Press, 1949.
- M'Call, Hugh. The History of Georgia: Containing Brief Sketches of the Remarkable Events Up to the Present Day. 1784. Reprint. Atlanta: A. B. Caldwell, 1909.
- Mowat, Charles Loch. East Florida as a British Province, 1763-1784. 1943. Reprint. Gainesville: University of Florida Press, 1964.
- Mowat, Charles Loch. "Material relating to British East Florida in the Gage Papers and other Manuscript Collections in the William L. Clements Library." Florida Historical Quarterly 53 (1974): 46-60.
- Mowat, Charles Loch. "St. Augustine under the British Flag, 1763-1774." Florida Historical Quarterly 20 (1941): 131-150.
- Rea, Robert R. "Lieutenant Colonel James Robertson's Mission to the Floridas, 1763." Florida Historical Quarterly 53 (1974): 33-48.
- Romans, Bernard. A Concise National History of East and West Florida. 1775. Reprint. Gainesville: University of Florida Press, 1962.
- St. Augustine. Administrative Office Files, Castillo de San Marcos National Monument.
- Siebert, Wilbur Henry. Loyalist in East Florida, 1774 to 1785; The Most Important Documents Pertaining Thereto, Edited with an Accompanying Narrative. 1929. Reprint. Boston: Gregg Press, 1972.
- Starr, J. Barton. Tories, Dons, and Regel-The American Revolution in British West Florida. Gainesville: University of Florida Press, 1976.
- Torres-Reyes, Ricardo. British Garrison of St. Augustine, 1763-1784. Denver: Denver Service Center, 1972.
- Wright, Jr., J. Leitch. Florida in the American Revolution. Gainesville: University of Florida Press, 1975.

BIBLIOGRAPHICAL ESSAY

Second Spanish Period

Fort Matanzas came under ownership of the National Park Service 45 years ago. Now, for the first time, more than a mere stab has been made to rend the veil hiding the history of construction and repairs on that structure during the second Spanish dominion in East Florida. Almost all the information contained in this report came from the vast collection of original documents called the East Florida Papers. An acquaintance with several categories or subjects of the collection is provided here. There will be no chronological listing of each document used in a particular category. The listing already appears though not chronologically in the notes to the text and serves adequately as an informal bibliography.

The East Florida Papers consist of about 60,000 original documents dealing with almost every facet of governmental administration in 1784-1821. They also include some correspondence of Governors Justis and Montiano with the governor of Cuba in 1737-1741. The collection is deposited in the Library of Congress, but the St. Augustine Historical Society holds a 175-reel microfilm of it. The 101 categories or subjects into which the East Florida Papers are classified can be grouped under major governmental functions devised for the purpose. Those functions are

- / communication with government ministries in Spain, the viceroyalty of Nueva España (México, and the captaincy general of Cuba;
- / military and naval organization, operation, and administration;
- / civil administration;
- / municipal government in 1812-14 and 1820-21;
- / ecclesiastical organization, operation, and administration;
- / trade and commerce;
- / relations with Indians;
- / immigration from the United States;
- / distribution and settlement of land; and
- / transfer to the United States.

Information on construction and repairs on Fort Matanzas comes naturally under the function of "military and naval organization, operation, and administration." The categories of documents under this function give an idea of the various elements which make up the whole of the garrison. Those categories are

To and from the ministry of war,
To and from the captain general of Cuba,
To and from the army intendant of Cuba.

Papers of the royal treasury,
Councils of finance
To and from the accountant
Treasury accounts,
Councils of war,
To and from the commander of the troops,
Musters returns by the army commissar,
Musters returns, Third Battalion of Cuba,
Accounts of the Third Battalion of Cuba,
To and from the artillery commander,
To and from the colored militia commander,
To and from the gunboats commander,
To and from commanders on St. Johns and
St. Marys Rivers,
To and from the judge advocate,
Courts martial,
Criminal proceedings,
Papers of the royal hospital,
To and from the commanding engineer,
Public buildings, fortifications, and
defense, and
Posts on St. Johns River and Amelia Island.

Thirty seven documents were used from the category "To and from the commanding engineer." They tell mainly of major construction and repair problems. An example of this is Cortázar's 1818 report on the condition of Fort Matanzas and recommendations for repair. There are also in this category the yearly summaries of the work performed on fortifications and public buildings up to 1792.

Information on construction and repairs can be found also in categories with unlikely names. For instance, the other annual summaries of work performed in 1793-1820 are located in "To and from the minister of grace and justice." Eight documents in this category were used and they were extremely worthwhile.

Deceptively, the category "To and from the commanders on St. Johns and St. Marys Rivers" yielded information on construction and repairs at Fort Matanzas. Despite its caption, the category contains also the correspondence to and from the commander of the fort. The letters tell of events and incidents transpiring daily and of the condition of lesser structural features, such as ladders and the drain pipe. They provide coverage over a longer period of time. This category and that captioned "To and from the commanding engineer" contributed 80% of the information in this report. The 43 documents used dealing with Fort Matanzas are, to the uninitiated, as good as lost in their present location.

Five other categories provided 13% of the information. "To and from the army intendant", "Muster returns by the army commissar",

"Delivery of East Florida to the U. S.", "Councils of War", and "Selected Papers" furnished the context of construction and repairs. That context consists of the advent of Spanish rule in East Florida, financial situation, specific defense measures, detachment strength, availability of materials, and the end of Spanish rule and consequent turnover of public property to the United States. Collectively the categories yielded 13 documents, among which is the crucial

"Inventarios formados por el Ingeniero interino del detalle, Don Ramón de la Cruz, teniente del Regimiento Expedicionario de Málaga, 31 de la línea, y comandante de las obras de fortificación de esta plaza; y el primer Ayudante de ella, Don Pablo Rosete, teniente de ejército, de todas las fortalezas y edificios públicos que se conocen son pertenecientes a la Nación, para la correspondiente entrega de ellas al Gobierno, que ha de hacerla al Comisionado de los Estados Unidos de América," June 4, 1821, enclosing "Plano N.º 5º, Torre de Matanzas con su barra."

There is never any assurance that all the information of a kind will be found in a single category. The origin of the 1818 Cortázar report on the condition of Fort Matanzas is a classic case. The commander's letter to the governor, calling attention to the deterioration, is found in "To and from commanders on St. Johns and St. Marys Rivers." The governor's order to the engineer for an inspection, and the latter's request to the governor for transportation to Matanzas, are in "To and from the commanding engineer." The governor's order to the accountant for furnishing passage lies in "To and from the accountant," since the latter provides a boat or pays for one. The engineer's report of the inspection and recommendations for repair, submitted to the governor, and the latter's postponement of resolution, due to lack of money, rest in "To and from the commanding engineer." The governor's referral of the report and recommendations to, and a request for construction funds from, Habana, and the reply that money will be sent, can be found in "To and from the captain general of Cuba." Indeed, crossing over from one category to another is frequently required in pursuing a story in the East Florida Papers.

BIBLIOGRAPHY

U.S. War Department Period

PRIMARY SOURCES

1. Manuscript Materials

In custody of National Archive

Records of the Corps of Engineers. Record Group 77.

General Correspondence. Letters sent to Engineer Officers. 1812-69.

General Correspondence. Letters Received. 1817-25.

General Correspondence. Letters Received. 1826-66.

Correspondence Relating to Fortifications. Letters Sent. 1866-70.

Correspondence Relating to Fortifications. Letters Received. 1866-67.

Correspondence Relating to Fortifications. Letters Received.
November 1867-November 1870.

Correspondence of the Fortifications Division. Letters Sent. 1871-86.

Correspondence of the Fortifications Division. Letters Received.
1871-86.

Letters Sent. Chief Engineer. 1886-89.

Letters Received Relating to Fortifications. 1886-87.

Letters Received Relating to Fortifications, Administration, and
Explorations and Surveys. 1888-89.

Subject Indexes to Series 96. General Correspondence. 1890-92.

General Correspondence. 1890-92.

Name and Subject Index to Series 98. General Correspondence. 1892-24.

General Correspondence and Record Cards. 1893-94.

Name and Subject Index to Series 103. General Correspondence. 1894-1924.

General Correspondence. 1894-1924.

Records of the National Park Service. Record Group 79.

Records of the War Department Relating to National Parks. 1892-1933.
Fort Matanzas.

Records of the National Park Service. Central Classified Files.
1923-49. Fort Matanzas.

Microfile.

Letters Received. Secretary of War, 1801-70. Microcopy M-221.

In custody of Castillo de San Marcos National Monument.

Copies of Various Documents from the Records of the United States
District Engineer. Office. Jacksonville, Florida.

2. Published

Parker, David. W. Calendar of Papers in Washington Archives Relating
to the Territories of the United States (to 1873). Washington.
1911.

Carter, Clarence E. (Editor). The Territorial Papers of the United
States -- The Territory of Florida, 1821-1824. Washington.
1956. Vol. XXII.

3. Maps and Plans

"Fort of Matanzas Inlet, 20 miles South of St. Augustine, E. Fla.
by Lt. H.W. Benham, Lieut. of Engrs., June 1843." National
Archives. RG 77.

"Triangulation Sketch, Showing the Position of the Fort of Matanzas
Bar and Inlet." National Archives. RG 77.

Secondary Sources

Chatelian, Verne E. The Defenses of Spanish Florida 1561 to 1763.
Washington. 1941.

Reynolds, F.H. The Standard Guide -- St. Augustine, Illustrated.
St. Augustine. 1886.

Reynolds. Charles B. Old St. Augustine: A Story of Three Centuries.
St. Augustine. 1886.

SELECTED BIBLIOGRAPHY

National Park Service Period

- Anastasia Island. Personal Interview with Edward Eaton, Former Park Ranger, Fort Matanzas National Monument. May 11, 1978
- Arana, Luis R.; Dutcher, David C.; Holland, Jr., F. Ross; and Strock, George M. Castillo de San Marcos and Fort Matanzas National Monuments, Florida Historical Research Management Plan. Washington D. C.: Office of Archeology and Historic Preservation. National Park Service. 1967.
- Burnson, T. Quentin. "Sedimentological Study of Matanzas Inlet, Florida and Adjacent Areas." Unpublished Master's Thesis, University of Florida, 1972.
- Fort Matanzas National Monument Draft Master Plan. Denver: Denver Service Center, 1976.
- Fort Matanzas National Monument Site. Personal interview with Luis Arana, Park Historian Castillo de San Marcos National Monument. May 5, 1978.
- Holland, Jr., F. Ross and Jones, Russell. Masonry Forts of the National Park Service. Denver: Denver Service Center, 1973.
- Jones, C. P. and Mehta, A. J. Matanzas Inlet Glossary of Inlets Report #5. Gainesville: University of Florida Press, 1977.
- St. Augustine. Administrative Office Files and Library. Castillo de San Marcos National Monument.
- St. Augustine. St. Augustine Historical Society Library, Fort Matanzas Vile.
- St. Augustine. Personal interview with Albert Manucy, Former Park Historian. May 8, 1978.
- St. Augustine. Personal interview with C. Raymond Vinten, Former Superintendent, Castillo de San Marcos National Monument. May 10, 1978.
- Washington, D. C. National Archives. Record Group 79. National Park Service. Central Classified File, 1933-49. Castillo de San Marcos National Monument.
- Washington, D. C. National Archives. Record Group 79. National Park Service Central Classified File, 1933-49. Fort Matanzas National Monument.

BIBLIOGRAPHY

Archeology

(note: American Anthro. Assoc. Style)

Arana, Luis

- 1974 Fort Matanzas National Monument. Interpretive history manuscript. On file, Castillo de San Marcos National Monument.

Cockrell, W. A. and Larry Murphy

- 1978 Pleistocene Man in Florida. Archaeology of Eastern North America VI (Summer) 1-12.

Deagan, Kathleen

- 1973 Mestizaje in Colonial St. Augustine. Ethnohistory XX, No. 1, (Winter) 55-65.

- 1976 Archaeological Investigations at Fort Matanzas National Monument, U.S. Department of the Interior, National Park Service, Southeast Archaeological Center, Tallahassee.

- 1978 Archaeological Investigation of the Fort Matanzas Interior--1978, U.S. Department of the Interior, National Park Service, Southeast Archaeological Center, Tallahassee. (Appendix G)

Dunkle, John

- 1967 Matanzas Inlet: A Geographical Analysis of Sequential Change. On file, Castillo de San Marcos National Monument.

Gluckman, Stephen J.

- 1966 An Archaeological Survey of Fort Matanzas National Monument U.S. Department of the Interior, National Park Service.

Griffin, John W.

- 1952 Prehistoric Florida: A Review in Archaeology of the Eastern United States, edited by James B. Griffin, pp. 322-334. University of Chicago Press, Chicago.

Manucy, Albert

- 1970 Fort Matanzas National Monument Interpretive History Manuscript on file, Castillo de San Marcos National Monument

Noel-Hume, Ivor

- 1970 A Guide to Artifacts of Colonial America, New York, Knopf

Todiman, Liev

- 1740 A Drawing of Matanzas Inlet as taken by Liev Todiman of the Phoenix who was sent with the Pilots of the Men of War to sound the same. Photo on file, Castillo de San Marcos National Monument.

Fort Matanzas Stabilization Team

George Schesventer, Superintendent, CASA/FOMA

C. Craig Frazier, Team Captain, Historical Architect, SE/SW Team, DSC

Luis A. Arana, Park Historian, CASA/FOMA, First and Second Spanish
Periods

Edward C. Bearrs, Historian, SE/SW Team, DSC, War Department Period

Randall W. Copeland, Historical Architect, SE/SW Team, DSC

Gary Cummins, Senior Archeologist, SE/SW Team, DSC

John C. Paige, Historian, SE/SW Team, DSC, British and NPS Periods

Terry L. Wong, Structural Engineer, SE/SW Team, DSC

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics staff of the Denver Service Center. NPS 1677

